The Chemical Age

A Weekly Journal Devoted to Industrial & Engineering Chemistry

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NOTICES:—All communications relating to editorial matter should be addressed to the Editor, who will be pleased to consider articles or contributions dealing with modern chemical developments or suggestions bearing upon the advancement of the chemical industry in this country. Communications relating to advertisements or general matters should be addressed to the Manager.

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"Surprising News"

A SPIRITED retort, which we gladly publish on another page, reaches us from Canada in reference to some comments in THE CHEMICAL AGE arising out of the nomination of Dr. Ruttan as president of the Society of Chemical Industry for next year. In so far as he suggests that the note implies lack of appreciation of the claims of Canada or of the character and qualifications of the president-nominate, our correspondent is energetically attacking a position which nobody has taken up. It was simply stating a fact to say that the announcement of Dr. Ruttan's nomination was surprising news on this side; but surprise need not imply, as our correspondent assumes, disapproval of the choice. Indeed, in our note on the subject, Dr. Ruttan was referred to as "a man of distinction with claims fully equal to the position," and Mr. Acton does but furnish a few facts in confirmation of this opinion. As to the promotion of good feeling between this country and Canada we have already pointed this out to Dr. Ruttan and offered to publish any message he may care to send to the chemical community of Great Britain with this object in view. Quite apart from any personal or territorial questions, there are movements of great importance to chemical industry as a whole in hand just now, which we think might have been better served for the time being by some other arrangement, and it is our correspondent who is unconsciously influenced by insular or parochial feeling in assuming that considerations of a large and impersonal character, affecting the welfare of chemical industry as a whole, could only have arisen from some small or unworthy feeling towards Dr. Ruttan or towards Canada. We very readily publish our correspondent's lively reply to what he has read as derogatory comments, but assure him that he is beating the air. Dr. Ruttan will need no assurance of respect and loyalty from every quarter during his term of office, and if he can find time to give a liberal share of time to work outside Canada so much the better.

The Growth of the A.B.C.M.

THE sketch which we publish this week, on the occasion of the annual meeting, of the aims and activities of the Association of British Chemical Manufacturers is little more than an outline; yet it conveys an impressive sense of the volume of important work already done, the rapidity with which the organisation has developed in various directions, and the power and resources which have been consolidated for collective action on behalf of chemical industry in this country. Moreover, the work is still in its infancy, for each Group is but a starting point for new operations on an extensive scale. It is difficult to realise that a body which has come to wield so much influence within and without chemical industry was non-existent less than six years ago. It would be both easy and just to pay generous tribute to many individuals whose work largely explains this signal success—to the successive chairmen, to the heads of the various Groups, and to the officials who have unceasingly planned and laboured to secure constant unity of aim and action. We refrain only from a feeling that it is the personal aspect on which those who have worked hardest would least wish us to dwell.

After all, it is the corporate character of the Association that most counts. It has broken down in what is still a rather exclusive industry the intensive individualism which often produced in detail fine results, but prevented results and experiences from being pooled for the general good. As a nation we have suffered heavily in the past from this divisive and obstructive rivalry; we stand to gain correspondingly from the loyal collective spirit which is steadily replacing it. The Association realised during the war, and has since made others realise, the vital importance of a vigorous and well-organised chemical industry to British industry as a whole, and just as chemists owe a duty to the nation, so the nation has been made to realise its indebtedness to chemistry. Further, the Association

has demonstrated that British chemists, both as scientists and as industrialists, are equal to the best the world can produce. It has depended solely on its own resources and efforts, and the result has been a welcome recovery of confidence in British capacity, unaided by adventitious or artificial protective devices. That way, we believe, lies our true policy for the future, and not the least of the services rendered by the A.B.C.M. is the object-lesson it has furnished in the value of national self-dependence and self-exertion.

Fuel Research Board and Seaweed

In discussing the recent visits to the Fuel Research Station, a chemical engineer remarked to us that, although as yet little attention has been given to the matter, he was particularly hopeful that, in time, the Research Board would evolve some process which would put on a profitable footing the industrial working up of seaweed. A solution of this problem would be of inestimable benefit to Ireland and certain parts of Scotland, where the once-thriving kelp industry has been practically killed by modern competitive processes. It is understood that the Fuel Research Board was originally approached in the matter by the Congested Districts Board of Ireland, and readily gave its assistance in the way of finding an outlet for the immense quantities of seaweed available. It is scarcely likely that a large-scale return can ever be made to the old system of seaweed burning; but, if carbonisation is substituted for direct combustion, there is a chance that the additional products obtained might, financially, just permit of a balance on the right side. Very much would depend, however, on the ability to recover to the best advantage iodine and potassium salts. With the old process of burning seaweed for the recovery of kelp, which was a comparatively thriving industry in the early part of the nineteenth century, about 20 tons of seaweed yielded a ton of kelp, while a ton of the latter gave about 8 lb. of iodine and large quantities of potassium chloride. A hundred years ago about 20,000 tons of kelp per annum (valued at £200,000 to £300,000) were produced on the Western seaboard of Scotland alone, whereas, to-day, the total production does not exceed some few hundred tons.

From the standpoint of iodine recovery, carbonisation as opposed to burning should present many advantages in that a considerable proportion of iodine is lost by volatilisation with the latter process. This fact was recognised in 1862 by an investigator named Stanford who subjected the weed to destructive distillation and found that the whole of the iodine remained in the fixed residue while tar and ammonia liquor were condensed from the volatile products. The residue was afterwards lixiviated, when the iodine passed into solution as potassium iodide. There are, of course, a number of recognised and effective methods of extracting iodine; but the main point to note is that, following carbonisation, the iodine yield may be as much as 12 lb. per ton of the seaweed residue obtained from the retorts.

As yet, the experiments at East Greenwich appear to have been solely confined to the carbonisation phase; and, naturally, as this is the initial step, it is primarily necessary to determine what promise it shows. Although the gas yield is particularly poor (amounting to about 800,000 B.Th.U. per ton of air-dried weed) the quantity of liquid products recovered is decidedly promising, while there is a moderate yield of a fairly good quality charcoal. The casual observer, however, is mainly struck by the fact that the material does not appear to yield nearly sufficient fuel in the way of by-products to effect its own carbonisation. Accordingly, it would seem that supplies of some suitable fuel, such as coke, would have to be brought in, which would seriously add to the expense of operation. If, however, the treatment of seaweed by carbonisation is eventually shown to be a hopeless commercial proposition it might still be worth while for an independent body, such as the Fuel Research Board, to follow up the contention of Sir William Clarkson that seaweed provides a starting point for the production of industrial alcohol.

Traders and Railway Rates

Considerable anxiety exists among chemical traders who have taken the trouble to study the provisions of the new Railways Bill as to the effect of the measure on the existing exceptional rates. These rates for particular classes of traffic have long been recognised in the trade and have been carefully codified for immediate reference by many firms. If they are cancelled, the system of many a business house will be temporarily disorganised, and traders will have another incentive to divert their traffic from rail to road. The Minister of Transport, whose attention has been drawn to the matter, has not much real comfort to offer. It is not proposed, as the Bill stands at present, to cancel all exceptional rates, but when the standard charges come into operation they will be increased by "an appropriate percentage addition," to be fixed by the Rates Tribunal. So adjusted, they will continue for a period of one year, during which it will be open to the traders and the railways to agree on the adjusted exceptional rates to be continued. In certain special cases the railways companies have power to meet the requirements of traders without a prior reference to the Rates Tribunal, but this assumes the railways to be eager to meet the convenience of trader customers, whereas their attitude too often is the reverse, and their by-laws generally give them the advantage at almost every point. This seems a case in which, if traders are to be in a position to secure fair consideration, concerted action on a large scale is essential.

As an example of the facilities now offered by road, we have been furnished with some facts relating to chemical traffic between Manchester and Liverpool. Any ordinary class of material, we are informed, can be shipped by road transport from Manchester works or warehouse to alongside ship at Liverpool at 18s. a ton, or from warehouse door to buyer's door at the same rate. The lowest railway rate (Class C) is 14s. 10d. per ton, station to station, plus cartage at both ends, probably 4s. 6d. to 5s. per ton in each case, making the total rate about 24s. If such conditions are fairly general, it is easy to understand why so many of the trading community favour a development of road traffic.

The New Dyestuffs Committee

THE Development Committee, just appointed by the President of the Board of Trade under the provisions of the Dyestuffs Act, is a considerably larger and more representative body than the Licensing Committee, as one might expect it to be, for while the latter is merely concerned in the application of restrictions on foreign competitive imports, the new committee is charged with the organisation on the constructive side of a British dyestuffs industry. Several members of the Licensing Committee, however, are included, and one of them, Mr. Woolcock, has been selected for the responsible position of chairman. It would be difficult to suggest a better choice, for Mr. Woolcock is known to be extremely keen on the development, as distinct from the merely restrictive, side of the work; he has played a great part in the organisation of chemical manufacture in this country, and brings a full experience of Parliamentary and public work to his new task. The technical, research, and commercial resources of the committee will be strengthened by the inclusion of such authorities as Mr. L. B. Holliday, Dr. Herbert Levenstein, and Mr. Max Muspratt. Mr. Holliday represents the interests of independent research and production outside the Dyestuffs Corporation; Dr. Levenstein is admittedly on the research side one of our most distinguished and experienced chemists; while Mr. Muspratt is known to hold views strongly favourable to the development of a British industry on the broadest co-operative basis. The committee as a whole seems well equipped for its responsible duties, but the balance of interests which it represents must not be allowed to exert the neutralising influence on initiative which a too perfect balance of independent views sometimes does.

The Key Industry Problem

THE quiet but steady progress of the Safeguarding of Industries Bill through Parliament is bringing the various industries affected up against the real problem the measure will raise, and informal conferences, it is understood, are proceeding with a view to the adoption of some definite and practical policy. On one point all parties are agreed, namely, the need of saving from extinction industries either actually started or considerably developed during the war. At present admittedly they are not strong enough to face unrestricted foreign competition. The practical question is whether a tax of 33⅓ per cent. supplies sufficient protection against it. In some cases it may; in others it is frankly stated to be quite inadequate. In the latter the alternatives are either a considerable increase in the tax, which would certainly strain the loyalty of consumers very severely, or a cheapening of the cost of production. In such matters the merchants' view is the decisive factor. They know almost exactly the economic figure at which it is possible to sell and the figure at which it is impossible to sell British goods against foreign competition. The responsibility, therefore, passes from them to the manufacturers, and from them, again, largely to the workpeople.

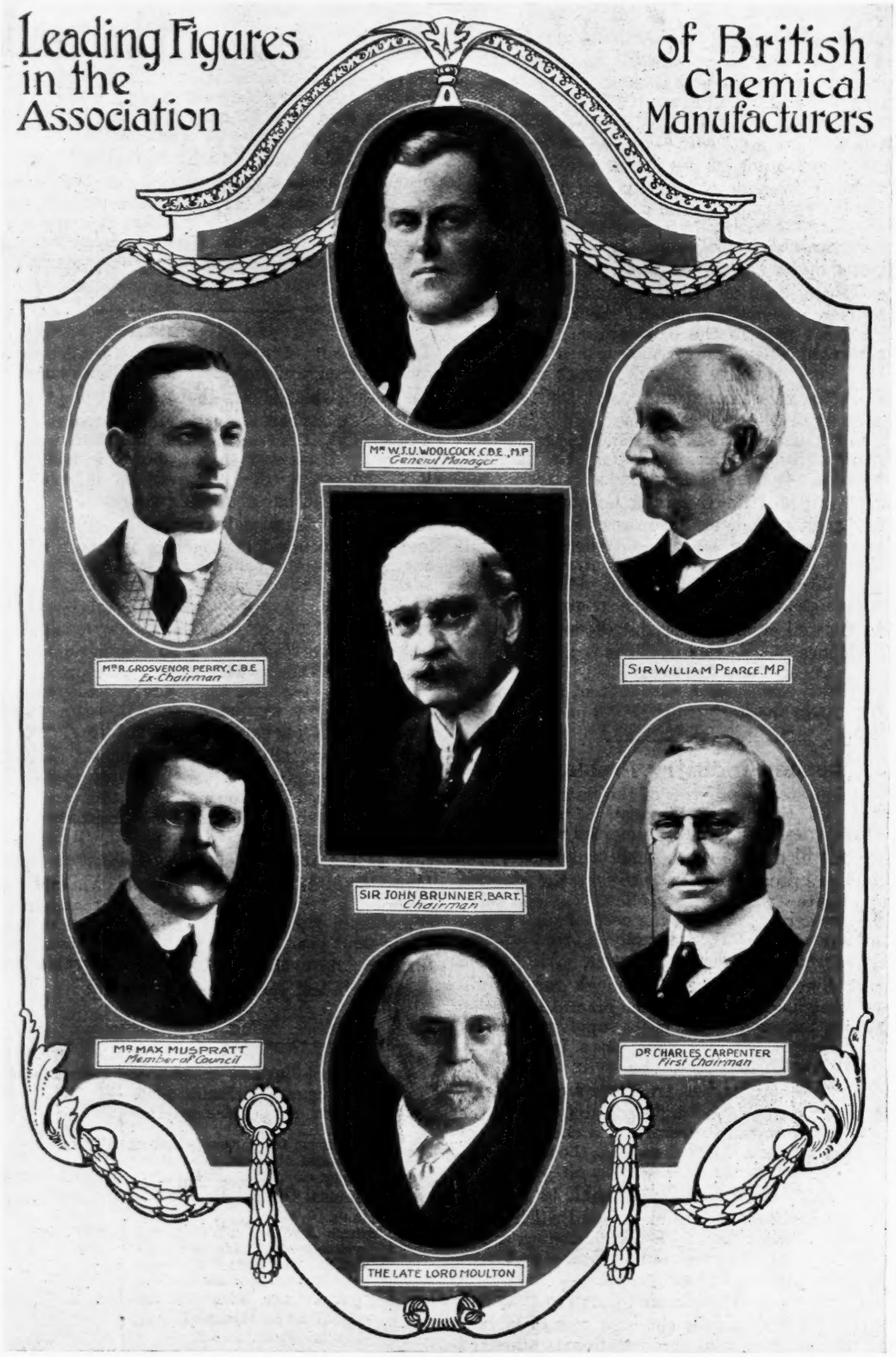
We are told on every side now that the principal handicap on British goods is the high cost of labour, coupled with a reduced or at best a stationary standard of production. It would seem clear, therefore, that while the purchasing public are prepared to accept some tax to encourage young industries in this country they would certainly resent having to carry the whole cost of establishing them. Parliament, we think, would hardly risk going beyond the figure of 33⅓. The burden, if it is to be carried, must be equitably distributed over all the interests concerned, including labour, and in some industries, we understand, exchanges of opinion are now going on with the object of arriving at a practical plan. Presently the results will, no doubt, be made public. For the moment it is enough to express satisfaction at the steps which are being jointly considered, and a hope that they may attain the ends in view.

S.C.I. Finance

THE Council of the Society of Chemical Industry may be congratulated on their balance sheet for the past year, which shows that a deficit of £2,353 at the end of 1919 has been converted into a profit of £46 5s. 2d. The surplus, it is true, is small, but there is a world of difference between a profit, however trifling, and a loss. Moreover, the improvement is much greater than the small balance would suggest, for the Council have made liberal advances of salary to the staff and have incurred expenditure in other ways. For example, editorial salaries and expenses in connexion with the Journal have been increased from £2,707 9s. 8d. to £3,343 2s. 6d., an increase of £635 12s. 10d. The total expenditure this year is £26,047 against £24,516 last year. On the revenue side nearly every item is larger than in the previous year. The principal source of income is the Journal. Advertisements and sales yielded £15,757 against £13,381 in 1919, though the total publication expenses amount to £20,707. This represents virtually double the amount derived from annual subscriptions, which is £7,918 against £7,437. The total expenditure on sixteen sections and one group is the modest sum of £1,416, while the grants to scientific societies only amount to £208. It will thus be seen that of the total expenditure of £26,047 rather less than four-fifths goes on the Journal, while of the total income of £26,093 something less than three-fifths comes from the Journal. The financial position for the present year, we are glad to understand, shows a further improvement on the favourable position disclosed in last year's balance sheet.

The Calendar

Aug. 6	North of England Institute of Mining and Mechanical Engineers: Annual Meeting. 2.0 p.m.	Newcastle-on-Tyne.
13	The Mining Institute of Scotland: General Meeting.	Glasgow.
29	Society of Chemical Industry: Annual General Meeting. 11 a.m.	McGill University, Canada.
Sept. 7-14	British Association for the Advancement of Science: 89th Annual Meeting: "Some Aspects and Problems of Post-war Science, Pure and Applied," by Sir Edward Thorpe, the President.	Edinburgh.


Leading Figures in the Association of British Chemical Manufacturers
MR W.J.U. WOOLCOCK, C.B.E., M.P.
General Manager
MR R. GROSVENOR PERRY, C.B.E.
Ex-Chairman
SIR WILLIAM PEARCE, M.P.
SIR JOHN BRUNNER, BART.
Chairman
MR MAX MUSPRATT
Member of Council
DR CHARLES CARPENTER
First Chairman
THE LATE LORD MOULTON

The Association of British Chemical Manufacturers

A Sketch of its Aims and Activities

In view of the annual meeting held on Thursday last, we give below a brief sketch of the valuable work already done by the Association and contemplated in the near future.

FIVE years ago it was truly said that none of our great industries was so lacking in organisation as the British chemical industry, and perhaps in none other is there such compelling necessity for efficient organisation. Fortunately this fact was recognised by some of our leading chemical industrialists and in the early part of the year 1916 a joint committee of the Chemical Society, the Society of Dyers and Colourists, and the Society of Chemical Industry met at the suggestion of the first-named to consider the best methods of promoting co-operation between British chemical manufacturers. The outcome was the formation of the Association of British Chemical Manufacturers, the chief objects of which were :—

(1) To promote closer co-operation between chemical manufacturers and between chemical manufacturers and the various universities and technical colleges.

(2) The furtherance of better technical organisations, and the promotion of industrial research; keeping in touch with the progress made in chemical knowledge and practice, thus facilitating the development of new British industries and the extension of existing ones.

(3) The formation of a medium through which the views of the British chemical industry could be placed before the Government in order that at all times Government Departments might have a reliable source of information with regard to the industry as a whole.

The Association came into corporate being at the end of the year 1916 and was duly incorporated under the Companies' Acts, the word "limited" being omitted by licence of the Board of Trade. The Association is divided into twelve groups, classified as follows :—

Group I.—Acids (including acetic and oxalic); carbonic acid; hydrogen; oxygen and gases; alum, chrome; zinc, copper and iron compounds; fertilisers (including super-phosphates).

Group II.—Alkalies; cyanides; chlorine and compounds; silicates; chlorates; borax; hydrogen peroxide; magnesia compounds (not medicinal).

Group III.—Fats; greases; waxes; resins; glycerine; soap.

Group IV.—Gelatine; sizes; glue; varnishes; paints; polishes; tanning.

Group V.—Coal-tar primary products (excluding ammonia and ammonia products).

Group VI.—Fine chemicals—analytical, pharmaceutical, photographic; rare earths; synthetic essences and perfumes; alcohol derivatives; ethers.

Group VII.—Phosphorus; manganese; potassium, sodium, barium, calcium, cadmium, &c.; lead; arsenic; antimony; tungsten; molybdenum, &c.

Group VIII.—Cellulose products (including paper); celluloid; rubber and substitutes.

Group IX.—Explosives and dyes and their intermediates.

Group X.—Glass; porcelain; pottery; refractory materials; lime; cement; chemical-resisting materials.

Group XI.—Allied industries: (*a*) Bleachers, dyers, and textile printers.

Group XII.—Distillation of coal, shale, oils and wood; alcohol; acetone; ammonia and ammonia products; charcoal; fuels.

The detailed work of the Association is done by the Groups, each Group having a committee of its own and meeting as and when required. Some of the Groups have found it necessary to meet weekly or fortnightly, others monthly, others only once a quarter. A representative council is elected annually and the chairman of each Group, if not already an elected or co-opted member of the council, is invited to attend each meeting of the council and represent the views of his group at the council meeting which takes place every month.

The firms who are members of the Association number over one hundred and fifty and the total capital of the firms is over one hundred million pounds. The Association is a very valuable one and it is not difficult to see where its strength lies. It is more truly representative of the industry than many Trade Associations, and the considered opinion of the Association is of value not only because of its representative character, but more especially because Chemical Industry is really several otherwise diverse industries linked together by the fact that they all have the science of chemistry as their basis. For example, there is as much difference between the tar, the intermediates, the dyestuff and the fine chemical groups as there is between many other industries which have associations of their own and are usually considered as distinct industries.

The interests of the Groups into which the Association is divided are indifferent, yet must be co-ordinated if the whole British chemical industry is to hold its place in the international rivalry which must inevitably be more strenuous than ever as trade revives. The main work of the Council, therefore, is the presentation of the views of the industry as a whole. It has before it at each monthly meeting the reports and recommendations of the Groups. Very seldom do all the Groups think alike on any one subject; their views have to be co-ordinated, their recommendations carefully considered so that no one Group shall unwittingly do anything to the prejudice of other Groups. It is this sifting of recommendations, this consideration of all the different points of view, which makes the decisions of the Council not only useful to the industry but valuable to the nation.

In an organisation of this kind one hopes to find the real leaders of the industry taking a proper share of the work and the responsibilities involved. This has fortunately been the case. From the commencement of the Association up to the time of his death, the late Lord Moulton was the President of the Association, Dr. Carpenter was its first Chairman, and the Association owes a great deal to his skilful welding together of the manifold interests which form the Association. His position in the industry enabled him to do this successfully, and he was succeeded by Mr. R. G. Perry who, fortunately, not only possessed superabundant energy, but at that time had sufficient leisure to devote a considerable portion of each week to the work of the Association.

The present Chairman, Sir John Brunner, Bart., has held the office for one year, during which time under his guidance the Association has continued its useful progress. The Vice-Chairman is Dr. E. F. Armstrong, F.R.S., who has served in this office for three years, assisting Mr. Perry and Sir John Brunner in their work, and bringing to it not only business acumen, but high scientific attainments. The finances of the Association have been in the hands of Sir William Pearce, M.P., who has been the Honorary Treasurer of the Association from its commencement. The Vice-Chair has also been filled by the Rt. Hon. J. W. Wilson, M.P., whose great public knowledge as Deputy Chairman of Committees in the House of Commons has been invaluable.

Others who have served on the Council from the commencement are:—Mr. Max Muspratt, J.P., Mr. John Gray, Mr. C. P. Merriam, Mr. A. T. Smith, Mr. C. A. Hill, Mr. David Lloyd Howard, Mr. F. H. Carr, Mr. Norman Holden, Dr. Robert Mond, Sir Harry McGowan, Sir Harold Boulton, Mr. D. Milne Watson, and Dr. Alfred Ree. Many others are also serving on the Council at the present time. The first general manager of the Association was Sir Charles Bedford, D.Sc., who has since been succeeded by Mr. W. J. U. Woolcock, C.B.E., M.P.

On Thursday last the Annual Meeting of the Association was held at which Sir John Brunner presented the Annual Report. A further idea of the scope of the work of the Association may be gathered from that Report.

It deals with such subjects as the Dyestuffs (Import Regulation) Act, which came into operation in January of this year, and details the steps which led up to the introduction and passing of the Bill. The Safeguarding of Industries Bill, which is now before Parliament, is also the subject of a paragraph of the Report. The development of Research in this country is not lost sight of. Continuous efforts are being made by members of the Association to provide all the research chemicals which are required by our scientific chemists, and in this work the Association acts as the connecting link between the scientist who requires the research chemicals and the industrial chemist who has to provide them.

Affiliated to the Association are a number of other associations, such as the British Chemical Plant Manufacturers' Association, the National Sulphuric Acid Association, the British Wood Distillers' Association, the Fertiliser Manufacturers' Association, and several others. The close association of chemical plant manufacturers and chemical manufacturers strikes one as being particularly valuable in view of the experience of continental nations. On the one hand, the plant manufacturers cannot develop British made chemical plant unless they know from the chemical manufacturers what plant they require, and, on the other, chemical manufacturers do not desire to be dependent on foreign-made plant the sources of which may be closed during war time. The bringing together of two such interdependent bodies is, therefore, particularly valuable in building up British industry.

The transport department of the Association is of particular interest in view of the establishment of the Ministry of Transport and the overhauling of our railway affairs. At the present time the Railways Bill is the principal Government measure before the House of Commons, and so urgent is the matter that two separate Committees of the House of Commons are sitting simultaneously dealing with the Bill. An efficient transport department such as the Association possesses must be of great value to its members. Many matters are touched on in the Report, and we are very glad to be able to congratulate the Association on the result of its five years' work. It is often said that the fourth and fifth years in the life of an industrial association are its critical period. The Association has not only survived the crisis, but appears to gather strength year by year, and no one need hesitate to forecast a very useful career and an honoured place for it in the history of industrial organisations.

Part of the premises used by Gibbs Fertilisers, Ltd., situated near the Victoria Docks, London, was destroyed by fire on Wednesday, and two firemen fell on to the river shore from a wall, but were rescued.

The U.S. Potash Producers' Association estimates an aggregate of 283,000 tons of POTASH available up to April 1, 1921, including 10,000 tons imported in December, 1919, 200,000 tons imported during 1920, 19,000 tons imported during the first three months of 1921, and 50,000 produced in 1920 by domestic plants and 4,000 in the first three months of 1921. The total is said to be 58,000 more than the consumption.

"Surprising News"

To the Editor of THE CHEMICAL AGE.

SIR,—The leading editorial in your issue of June 4, headed "Surprising News," must indeed come as surprising news to your readers on this continent, and to a great many in England, and particularly so at a time when thorough co-operation and best of good feeling is essential among all parts of the Empire and of the Anglo-Saxon chemical world.

It is, of course, taken for granted that the President of such a body as the Society of Chemical Industry must be a man of outstanding ability and reputation among scientists of the world, and in selecting Dr. Ruttan as their nominee for President the various Canadian sections took that into account, and regard their responsibility very seriously. According to long-established custom, it was understood that when the annual meeting was held for the first time in Canada, also for the first time in the history of the Society, a Canadian was in line for the Presidential chair. Prior to this, that office has been occupied on several occasions by outstanding chemists from the United States. The Canadian sections, of which there are now five, located in Toronto, Montreal, Ottawa, Shaminigan Falls and Vancouver, had a number of men of presidential calibre from whom to choose, but were unanimous in their selection of Dr. Ruttan.

As to Dr. Ruttan's qualifications for the office, I do not think that you have pursued your inquiries very far, or you would have obtained more information about him than is indicated by the tone of your editorial. He has already occupied the position as Vice-president of the Society, is head of the Department of chemistry at McGill University, which ranks very high, not only as to size, but as to reputation, among the universities of the world. He is President of the Royal Society of Canada, and is chairman of the Honorary Advisory Council for Industrial and Scientific Research, a body appointed and supported by the Government of the Dominion of Canada for the purpose of the development of commercial research and natural resources. Selecting a Canadian President was done with the understanding that the man chosen would be in a position to spend a certain amount of his time in England, so that your suggestion as to his "ploughing a lonely presidential furrow in his own Dominion" is rather off the mark.

While not disparaging for one moment the past incumbents of this office, or disagreeing in the slightest with your opinion of Sir William Pope and the other outstanding English chemists who have rendered services of inestimable value during the past few years, and while taking into account the great force which can be wielded by the Society in England, you must bear in mind that the Society of Chemical Industry, as it now stands, is not an insular body, nor is it even confined to the British Empire. I would suggest that you satisfy yourself as to this statement by an examination of the records of membership of the Society, when your opinion may be affected by the discovery of the large proportion of its membership which is now located on the western side of the Atlantic Ocean.

The majority of your Canadian readers will realise that your editorial does not represent the thought of fair-minded and thinking chemists of Great Britain. The past few years have brought Canada closer to Britain in thought and feeling than ever before, and it is not to be thought for a moment that the consensus of British opinion should be represented by such a narrow viewpoint as is indicated by your editorial.—Yours, &c.,

LEONARD J. ACTON.

494, Summerhill Avenue,
Toronto, Ontario, June 24, 1921.

[Some comments on this communication appear in our Editorial Notes.—ED., *C.A.*]

A Government dump of 500 tons of scrap rubber, at Iver Court Farm, Iver, Bucks, was destroyed by fire on Wednesday afternoon. Fire brigades from neighbouring districts attended, but were hampered by the shortage of water and devoted their attention to the task of preventing the fire spreading. The molten rubber was running away in streams when the firemen arrived, and they had to work in gas-masks owing to the stench and fumes. The rubber was previously stored at Wapping, and was removed in consequence of a fire on October 31 last.

The "Revolution" in America

How Workers are becoming Capitalists

By Ernest J. P. Benn

REVOLUTION is not a word to conjure with in the United States; indeed, if you use it too often they lock you up. Nevertheless, the world will shortly awaken to the fact that the only revolution of a constructive kind has really taken place in the land where the word is taboo. A conversation which I had with the head of one of the biggest American industrial concerns brought the whole thing home to me very vividly. He was a man who would correspond to Lord Leverhulme in the size of his operations and the number of his employees. The capital of the concern over which he presides amounts to $750,000,000, a sum which has been built up by degrees during the last thirty years. The business is a history of expansion, every year more and more capital has been required, and so far as can be seen, it will continue to grow. The board of directors for many years past has maintained an organisation in London, and another in Wall Street, New York, particularly for the purpose of arranging the further issues of capital stock necessary for the growth of the business. But the war upset these plans. It became more and more difficult to raise money for industrial investment in the recognised money market. Big blocks of shares could no longer be placed on reasonable terms. The rates of interest payable by Governments made money too dear for an industry in which only a modest return can be found. So a new department was started, and a staff of tavellers engaged to sell stock to the working classes. More than half of this great business now belongs to holders of less than forty shares, sixty per cent. of the workers engaged in the business itself are now part proprietors, and the annual general meeting of the shareholders reminds one of nothing so much as a labour demonstration at the Albert Hall.

This is the most important case of the kind that I discovered, but the same tendencies are noticeable in every works one enters. I picked up the latest copy of the *Ford News*, and read: "Since the 1st of January more than $1,827,000 has been received by the investment department as payment towards employees' investment certificates, this in spite of the fact that nearly all employees were laid off from two to eleven weeks, in spite of the extra expenses which war brings to all, in spite of the still high cost of some necessaries. What more thoughtful and convincing illustration can be asked of the power for good in the saving habit? More than $6,600,000 worth of certificates have been paid for by Ford employees, who are determined that they shall be taken care of when that rainy day comes, that they shall not be without food and shelter the minute their jobs stop, that they shall have a home of their own and other things, and that their old age shall be well provided for."

It seems pretty wonderful that the 55,000 workers of the Ford Company should have been able to pay into the investment department an average of $110 apiece, but this is the most insignificant of the evidence of the saving revolution which is to be found even in the Ford works. Every street corner in the neighbourhood of this great establishment is occupied by the branch of a savings bank, not one of which could pay its rent on the sum which has gone into the investment department of the firm itself, so that it is easy to see that the Ford workers are, in fact, a great army of comfortable capitalists.

The International Harvester Co. has, I understand, 40,000 employees, of whom no fewer than 8 000 are stockholders in the company, a proportion which would give about the average of the numerous cases into which I inquired. A typical noti e which I read in one pay office is headed "My business, Your business, Our business," and goes on briefly to explain the unctions of the management and the workers, and leads up to the conclusion that the business belongs to the men and women in it as a whole. There is no abstruse argument as to the theory of control; control is passing in the only natural and practical way.

The Americans leave nothing to chance. They are a determined, downright, matter-of-fact, people, and they have taken up this question of employee investment in characteristic fashion. There is a whole literature on the subject. Works committees, employees representation councils, industrial councils, and outside organisations are all busy promoting the thrift and investment idea. Some of the older of these schemes take rather too much of a paternal character for the modern world, but they have an attraction of their own. John Wanamaker, the founder of the oldest store in the world at Philadelphia, talks continually of the "Store Family" in the pamphlets dealing with the social and investment activities of the staff. The Timothy Eaton Store in Toronto has the same characteristic, the millionaire proprietor in each case posing as the father of a family, and so far as I was able to judge from inquiries lower down the sentiment is fully reciprocated.

Some of the American industrial literature of thrift is good, some bad, some indifferent, but it is everywhere. The hotel employees of the Statler Company are confronted with a notice which informs them that "No one can tell what the future will bring; no one can afford to take chances. The man who fails to save for the days of possible adversity is false to his own best interests, and faithless in his obligations to those dependent upon him." This is the text on which is built a new bonus and thrift plan, which seems to be very popular with the big staffs of these enormous establishments. Another concern hands me a leaflet entitled "Thrift as a Joy."

The first English paper I picked up on boarding the "Empress of Britain," at Quebec, was the *Westminster Gazette*, and the first article that attracted my eye was headed: "The Case against Capitalism." On reading I found that Mr. R. W. Tawney, one of our most accomplished writers, had produced an indictment of capitalism which, according o the *Westminster*, was sure to be accepted. This journal added its opinion that "the present system will not even lumber on for very long, unless it can find some answer to the fundamental question Mr. Tawney poses to it." These sentences woke me up with a shock from the American dream in which I had been reposing for six weeks. The fact that a wholly unpractical and inexperienced visionary like R. H. Tawney, who in America would be pitied, can not only find a hearing but get a blessing from the columns of one of our best authoritative newspapers shows the extent of the ravages of the communistic disease amongst us. America is producing wealth at an unprecedented rate, and has now found a practical solution to the problem of distribution, while we——.

A New Process for Manufacturing Intermediates

A REACTION which may have considerable technical significance has just been described by Professor Lapworth, of Manchester University. It relates to the reduction of aromatic nitro derivatives to the corresponding hydroxylamine compounds. Many aromatic hydroxylamine derivatives have been produced in the past, but the method was usually dependent upon the use of ammonium sulphide or hydrosulphide, and the reaction was carried through in alcoholic solution. (Compare Willstatter's experiments.) At the suggestion of Dr. Levenstein, an attempt was made to use the cheaper sulphides and hydrosulphides, and to work in aqueous solution. This has been found possible by effecting intimate contact between the nitrobenzene, for example, and the solution of sodium hydrosulphide by emulsification. Kieselguhr was at first used to effect emulsification, in the same manner as the Germans used sawdust in the hydration of pinene to form terpin hydrate. Later, however, calcium chloride was added to the solution, and the lime hydroxide or basic sulphides produced sufficed to make emulsion possible and fairly permanent. Thus, nitrobenzene, maintained in intimate contact with sodium hydrosulphide solution, was reduced to phenyl hydroxylamine, which is easily recovered, since it separates as a solid, and can be filtered from the solution obtained when ammonium chloride is added upon completion of the reaction.

Homologues of nitrobenzene and substituted aromatic nitrocompounds have also been successfully reduced in this manner. Most of these are solid at ordinary or slightly raised temperatures; but in solution or even suspension in benzene, emulsification can readily be effected with sodium hydrosulphide solution in water, with the aid of calcium chloride. The hydroxylamine derivatives produced again separate as solids and good yield sare normally obtained. The advantages of the process over the old treatment with expensive reagents in alcoholic solution are obvious.

National Dyestuffs Industry for Britain—(II.)

Review of Government Policy and Results

We give below the concluding portion of our extracts from the White Paper (Cmd. 1370, 4d.) on the British dyestuff industry. Previous extracts were published in THE CHEMICAL AGE *of July 2 and 9.*

Profits Realised

The average annual profit of the two companies together over the 3¼ years preceding amalgamation was approximately £650,000. The annual profit required to pay interest on the issued share capital of the Corporation at the rate of 7 per cent. on the Preference and 8 per cent. on the Preferred Ordinary and Deferred Ordinary shares would be approximately £692,000. We have enquired to what extent the expectation of profits held out in the Corporation's prospectus has since been realised. For the year ending 31st October, 1919, the profits amounted to £172,504. The armistice occurred just at the beginning of this financial year and the failure to come within reach of the anticipated profits is attributed to the change over from war to peace production. For the year ending October 31st, 1920, the revenue available for distribution was £610,927. It has been explained to us that this year includes nine months of good trade and three months during which simultaneously there set in a trade depression and the competition of imported dyes began seriously to be felt, and it is suggested that had it not been for the operation of those two factors the Corporation for that year would have more than realised its anticipated profits. We note from the balance sheet for the year ending October 31st, 1920, that during the two years of the Corporation's existence a total amount of £593,486 was written off the values of the Associated Companies' Buildings and plant and that a total sum of £289,366 including capital outlay, was expended during the same period upon research. (In regard to the latter figure it should be noted that a grant of £100,000 was received from the Government in discharge of the already mentioned undertaking entered into by the Government when British Dyes, Ltd., was formed.) We are further informed that the whole of the undivided profits of the Corporation since the amalgamation have been absorbed in increasing working capital and that no loan money has been provided since the date of the prospectus.

Issue for Public Subscription

We have observed that, at the time of the original formation of the earlier company, British Dyes, Ltd., it was generally held that it was desirable for the ordinary capital of this company to be provided by dye users, so that, in effect, there would be created a producing co-operative company of dye users who would be less interested in the profits earned by the company than in the quality, cheapness, and security of their supplies of colours. When, however, in 1919, the British Dyestuffs Corporation came to be formed, this earlier view seems to have been abandoned, and the new Corporation was allowed to offer 2,500,000 preference and 2,500,000 preferred ordinary shares for public subscription. We have been asked to consider whether it was not a mistake to allow the Corporation to go to the public for capital, in that the Corporation, in inviting the general public to take up shares in the company, was placing itself under an obligation to this section of its shareholders to earn dividends on a speculative investment rather than to produce dyes at a reasonable price. We incline to the view that the admission of the general public was regrettable and we are of the opinion that if at the outset the additional capital required by the British Dyestuffs Corporation had been taken up exclusively by dye consumers the holding of the shares would have been on a far more satisfactory basis from the national point of view. We are informed, however, that the possibility of obtaining the additional share capital required from dye users was fully explored before the Corporation's prospectus was issued, and it was only after it became plain that dye users would be unable or unwilling to subscribe the £5,000,000 required for the new undertaking that the shares were offered for subscription by the general public.

Desirability of Formation

We turn now to the question whether the spokesmen of the dye-using industries were well advised in urging, and the Government in promoting, this large and powerful trade combination. The answer can be given either in the light of circumstances at the time or in the light of after experience. Considered from the former standpoint it will be remembered that the overwhelming need was to increase rapidly the output of dyes. It was further generally held to be all-important to build up a dyes industry which would endure. The obviously proper course was to arrange for all knowledge and experience to be pooled for the benefit of all, and for the work to be distributed among all the manufacturers so as to ensure the most efficient production; but the great bulk of the newly-expanded industry was divided between two concerns, and it was too much to expect that firms should give away to their actual or potential competitors the knowledge which was the foundation of their businesses. It was obvious that the desired consummation could not be obtained without some financial interlinking. These seem to us to be good and sufficient reasons for the action taken. In reply to our question why in pursuance of this principle the area of the amalgamation was not extended so as to include other dye-manufacturing concerns, we were informed that the other companies that mattered, that produced anything of consequence, were the British Alizarine Company and the Clayton Aniline Company. The latter was a Swiss firm, and the British Alizarine Company made just their own range of dyes and did not wish to come into the merger.

Advantages of Combination

In more general terms it has been put to us that the advantages of combination in the dye-making industry as against the independent existence of separate competing firms are that: (1) the whole of the knowledge and experience of the several parts of the large combination are at the disposal of the whole; (2) research can be carried out under centralised direction, and its results placed at the common service; (3) substantial economies in management expenses, overhead charges, and selling expenses are effected; (4) the centralised receipt and allocation of orders permits of large-scale production, with the economies resulting therefrom; (5) materials and equipment can be obtained on more favourable terms by one consolidated concern than by two or more buying in competition with each other; (6) better and more profitable use can be made of by-products; and (7) the greater financial and commercial strength of the amalgamation enables it to compete to better advantage in the home market and in the world markets with the greater and powerful dye-making concerns of Germany, Switzerland and America.

In seeking to ascertain to what extent these advantages had been in fact realised by the Corporation up to the end of last year, we have been met by the difficulty that the costings in works engaged in dye manufacture are of an extremely complicated character, which in itself makes it difficult to compare the production cost of one period with that of another, and that after the amalgamation the costing systems had to be brought into alignment, and have since been subjected to certain alterations and improvements. Again, great expansion had taken place in both concerns in the three years prior to the amalgamation, and again in the two years following, and this would in itself have influenced costs even had there been no amalgamation. It is also to be remembered that shortly after the amalgamation the change over from war to peace production began. For these reasons the Corporation was not able to furnish us with comparable figures showing what economies, if any, in the cost of production had been effected as a result of the amalgamation, and our views upon that question will have to be based upon general considerations. We are informed, however, that as a result of amalgamation research has been centralised, and its results placed at the common service, production has been unified and interlocked, by-products formerly wasted are turned to profit, and the expenses of direction have been greatly reduced.

Off-setting Losses

We have considered whether, and if so to what extent, these gains should be offset by losses due to the abolition of competition between the two branches of the Corporation, with resulting loss of efficiency due to a falling-off in the keenness to cut out waste and improve processes which competition is commonly held to stimulate. The representatives of the Corporation with whom we discussed this were positive that the gains far exceeded any possible loss, and were firmly of opinion that there was no ground for the supposition that as a result of the amalgamation the stimulus of competition had been removed. It should be remarked, however, that the main ground for this opinion was that the prospective competition of Germany provided an all-sufficient stimulus. We remark in passing that to some extent the vigour and enterprise of the Corporation will depend upon the degree to which it is allowed to feel the stimulus of competing imports.

The balance of gain and loss in amalgamation assumes greater importance when we consider the present position and future development of the amalgamation policy from the national standpoint. In so far as there is at present a fairly considerable section of the general dye-making industry outside the Corporation the advantages of centralised research, pooled knowledge, unified direction, large-scale production, &c., are only partly realised. On the other hand the existence of these independent manufacturers constitutes a salutary check on the Corporation's costs of production, and a real safeguard against any possible danger that the Corporation might use a position of monopoly to enforce unduly high prices. The success which has attended the operations of several of the smaller dye-making concerns leads us to think that the advantages of centralised and large-scale production may easily be exaggerated, and for this as well as other reasons we attach importance to the continued existence of independent concerns, even though the solidarity of the British dyes industry is thereby rendered less complete.

Future Policy

We should view with apprehension, therefore, the pursuance of a policy of absorption which would render negligible the proportion of the industry outside the Corporation. The policy adopted by the great German and American dye-making concerns has latterly been not so much to complete the process of combination on the horizontal plane as to form vertical combinations with tar distillers and makers of heavy chemicals, so that there is brought under one financial control the whole process of dye manufacture from the distillation of coal to the production of the finished dyes. If the British dyes industry should prove unable, by reason of its inferior degree of unification, to compete successfully with its foreign rivals, and if a further development of combination should be considered necessary, we think it likely that an extension in the vertical rather than in the horizontal plane would prove the more advantageous.

Reasons for Increased Prices

We have inquired as to the reasons for the increases in the price of British synthetic dyes, and in evidence given before us, they have been attributed to the very high cost of raw materials, the increased cost of fuel and labour as also of all machinery and plant, and the high level of the expense incurred by necessary alterations to plant to adapt and improve the processes of manufacture.

One, however, of the most important causes of the increase in the prices of dyestuffs was the cost of manufacturing intermediate products. Before the war, the more important of these intermediate products were obtained from Germany practically at cost, and in many cases actually below cost. This was part of the policy pursued by the German dye-making concerns to stop the development of the dyestuffs industry in the United Kingdom and to keep some control over the range of colours produced in this country. The manufacture of intermediate products is the key to the dye industry and the construction of plant for the manufacture of these products is costly. The British manufacturers of these products were breaking new ground, and owing to their lack of knowledge and experience were naturally unable to reach the same standard of efficiency as that to which the Germans had attained. We fully realise that no attempt to establish the British dyes industry on any secure basis can be successful unless it starts from the crude products, and we recognise that time and experience will be required before the British manufacturers can reach the high standard of efficiency to which the Germans—with their 50 years of experience and development—have attained. This higher manufacturing cost of the intermediate products affected directly, of course, the cost of all dyes and dyestuffs.

As regards the increases in price of the various raw materials used by dye manufacturers, we have been furnished with the following statement showing the increase in the price of some of these materials in September, 1920, and in April, 1921, as compared with the pre-war price :—

Material.		Cost price pre-war.	Price in September, 1920.	Price in April, 1921.
		£ s. d.	£ s. d.	£ s. d.
Anthracene 40 per cent.	per cwt.	0 6 8	2 13 4	1 16 8
Naphthalene	per ton	9 15 0	60 0 0	20 10 0
Muriatic acid	per Cby.	0 1 1	0 9 0	0 7 0
Bichromate of soda	per lb.	0 0 3	0 0 9	0 0 7½
Soda ash	per ton	3 5 0	5 12 6	7 6 9
Double oil of vitriol	,,	3 10 0	9 17 6	9 0 0
Caustic soda	,,	13 7 10	22 0 0	24 10 0
Brown oil of vitriol	,,	2 8 0	5 0 6	4 15 0
Oleum	,,	3 10 0	10 15 0	10 15 0
Salt	,,	0 12 4	2 19 11	3 2 10
Lime	,,	0 15 0	2 15 7	2 15 6
Crude naphtha	per gall.	0 0 6½	0 1 11½	0 1 11¼
Methyl alcohol	,,	0 2 10	1 8 8	0 7 10
Nitrate of soda	per ton	10 10 0	24 15 0	21 15 0
Nitrite of soda	,,	25 0 0	82 10 0	47 10 0
Sulphite of soda conc.	,,	·7 15 0	21 0 0	31 0 0

Between July, 1914, and July, 1920, the price of furnace coal rose from 10s. 8d. to 38s. 10d. per ton, an advance of 264 per cent., and though it has recently (April, 1921) fallen by 2s. per ton it remains 245 per cent. above pre-war level. The rate of wages of process men rose from 5½d. an hour in July, 1914, to 1s. 7d. an hour in July, 1920, an increase of 245 per cent., and is still 209 per cent. above pre-war level. We have not been able to give any representative figure for the increase in the price of material for renewals and repairs, but we understand that it has ranged from 300 to 600 per cent. As regards new premises and plant the costs of building during the period of greatest activity in the construction of new premises for dyes manufacture were from 200 to 300 per cent. higher than in 1914.

So far as we can ascertain there was no question of dye manufacturers taking advantage of the situation to drive hard bargains with their customers; all the evidence we have heard goes to show that either Messrs. Levinstein or British Dyes, Ltd., or any of the smaller manufacturers, had they cared to exploit the situation to the utmost, could have obtained for a wide range of their products far higher prices than those at which they did in fact sell. This is borne out by the fact that they had to "ration" their customers, and to stipulate that dyestuffs sold to customers should be used by them and not sold again. The "open market" price of these dyes was in some cases many times higher than the price at which they were being sold to reputable users by the manufacturers, and considerable profits were made during this period by dealers who made it their business to seek out and acquire surplus supplies at something more than makers' prices and sell them again at "open market" prices. The influence of the amalgamation on prices is submerged by the other influences at work, and our attempts to single it out for separate examination have proved fruitless.

Quality

In connexion with this question of the increased prices of British dyes, a complaint has been made to us that the present strength of many British dyes is less than that of the pre-war German dyes. We have, therefore, made inquiry of certain dye manufacturers with a view to ascertaining whether or not there has been, in effect, any adulteration or dilution of British dyestuffs, or whether the pre-war German standards of strength are, in fact, being maintained. In the replies received by us from various dye manufacturers, we have been informed that in practically every case the present concentration of British-made dyes is the same as for the pre-war German standards. In some cases, however, we consider it possible that such complaints have arisen owing to the fact that the colours being

made by the British manufacturers, whilst they are suitable for important industries such as the textile industry, have not been equally suitable for purposes such as leather dyeing, and this occasional unsuitability may have given rise to complaints of lack of strength. We are assured that any deficiencies of this character were merely temporary, and that they have since been remedied.

Non-Commercial Considerations

There are differences of opinion among us as to the desirability of making sacrifices to build up and maintain a formidable dyes industry in this country on any other basis than that of industrial and social utility; in other words, as to whether the dyes industry should be accorded special solicitude and even support on the ground that it provides within the national boundaries plant and technique which in the event of another great war could be instantly changed over to the making of the high explosives and poison gases which it is anticipated will largely determine the issue of any future international conflict; or still more important that it provides a training ground and a career for chemists who in such an eventuality would be able to apply themselves at once to the problems of chemical warfare. If, however, the dyes industry is to be regarded henceforth as ancillary, or complementary, or supplementary to the military, naval and aerial preparations of the several Great Powers, the competition in dye making will assume a character akin to the competition in armaments, and the productive capacity of the world as regards dyes and dyestuffs will increase out of all proportion to the world's requirements. The belief has been expressed that even at the present time the world's capacity for producing dyes is two and a half times its normal requirements. If that be so, and if it be a portent for the future, the price of dyes and dyestuffs will fall to a level at which no dye-making concern in any country can remain solvent without subsidy in one form or another from the State, and we envisage the great dye-making amalgamations of the leading Powers claiming subsidies from their Governments on the incontestable ground that they are an integral part of the national provisions for defence.

British Position in Relation to International Competition

In view of the great and powerful combinations of dye-making concerns in Germany, America, and to a lesser degree Switzerland and France, it is a warrantable assumption that the British dyes industry could only be put into a position to compete effectively with its foreign rivals, whether in the home or in neutral markets, by some financial unification of its principal component firms such as that represented by the British Dyestuffs Corporation. Holding as we do the view that the giant concern is not necessarily either more efficient, enterprising or economical in its operations than the congeries of smaller concerns competing one with the other, we are at the same time impressed, as a result of the evidence we have heard, with the degree to which international competition in dyes (as also to some extent competition within the national frontiers) is a conflict of commercial "Great Powers" exhibiting all the characteristics of militant diplomacy carried on with financial and commercial brute force in the background, rather than a simple economic matter of striving to offer, in competition with others, the most acceptable article at the most favourable price. In this "*haute politique*" of large-scale industry the unassociated group of small concerns, though severally and jointly more efficient as regards mere production, may be at the mercy of the aggressive and predatory policy of the less efficient but financially more powerful rival. For this reason we subscribe to the view that from the standpoint of international competition the policy represented by the formation of the British Dyestuffs Corporation was the right one. On the other hand, from the point of view of ensuring that the dye users of this country will be able to procure the most desirable dyes at the most favourable prices, we think it essential that there should be a fringe of independent British dye manufacturers outside and in competition with the British Dyestuffs Corporation, and we are of opinion that the operations of the Corporation should be zealously examined from time to time to see that their preponderant financial position in the British section of the industry is not being used deliberately to put out of competitive action their smaller British rivals. These two aspects of the situation call for separate consideration.

Ability to Meet Home Needs

We have enquired as to how far the British Dyestuffs Corporation, together with other British manufacturers, is to-day in a position to supply British dye users with the dyes they require. This is obviously the first step in the direction of meeting the fierce brunt of German competition, and it is a step of the utmost importance to the British textile industry, which, if it is to maintain its pre-eminent position in neutral markets, to which four-fifths of its manufactures go, must be able to obtain the best dyes produced anywhere in the world. We were informed by the representative of one company which gave evidence before us that before the war they had access to 2,000 different shades of dyes, but that at the beginning of the present year they could obtain from British sources supplies of only 500. It is obvious that the textile and other dye-using industries of this country could not allow themselves to be placed in the position of being confined to a limited range of home-produced colours while their competitors in other countries had access to all the best colours of the world, and unless British dye makers can supply dyes which are "as good as the best" it is a condition of existence for our dye-using industries that they shall be able to go abroad for dyes not obtainable at home and be able to import them free of duty.

Position of British Production

As regards the tonnage of dyes, we have said that the home consumption of dyes before the war was estimated at 20,000 tons, and it is estimated that the consumption for 1920 was 25,000 tons. There is general agreement that British concerns have a productive capacity, in terms of weight, equal to the present or prospective demands of the British dye-using industries. The output of the British Dyestuffs Corporation alone for the year 1920 reached 16,000 tons on the average of the year, and at the period of greatest output was at the rate of 18,000 to 20,000 tons a year. As regards range of colours the position is less satisfactory. The British Dyestuffs Corporation took, as their starting point, the list of dyes which a Committee of dye users, presided over by Sir Henry Birchenough, decided were necessary for the textile and other industries of this country. The Birchenough Committee proceeded by obtaining from dye users in every branch of industry a list of the dyes they had used in 1913, and these lists, when as many as possible had been obtained, were combined in one aggregate list which showed a total of over 1,000 dyes. Many of these were identical colours under different names, others were sufficiently akin to be practically duplicates, others were of negligible importance, and after the list had been submitted to critical examination a selection of 200 dyes was made which it was considered would be sufficient to meet for the time being the requirements of the dye-using industries. Since the compilation of the original Birchenough list, the Corporation has regularly been in touch with various sections of the dyeing industry, including the calico printers, paint and varnish makers, paper makers and leather dyers, and has obtained from time to time lists of dyestuffs used by them during 1913, and if it has been necessary new colours have been added to the Birchenough lists. Although considerable headway has been made and the range of colours supplied from British sources has been amplified to a degree which would have been deemed impossible before the war, there remain a considerable number of the finer dyes which must either be obtained from abroad or foregone altogether. The volume or proportion of these has been outside our power of ascertainment; the position will be more accurately known as a result of the proceedings of the Licensing Committee operating under the Dyestuffs (Import Regulation) Act.

Research

It should be understood, however, that the dyes which are thus far unobtainable from the British Dyestuffs Corporation or from other home sources are not being neglected. Some of them are undergoing research, as regards others the process of research is completed and plant is being designed or has been designed for their manufacture. We have already said that the capital expenditure which has been incurred by the Corporation, and with the aid of the £100,000 grant from the Government, upon laboratories and research equipment is nearly £300,000. During 1919 the current expenditure on research was over £70,000, and during 1920 £90,000. During

the period of greatest activity over a hundred chemists were employed in the laboratories of the British Dyestuffs Corporation alone, while a close intercommunication was maintained with the science laboratories of the principal universities. We have referred already to the excellent results of the research work carried out by Scottish Dyes, Ltd., and of the achievements of the British Alizarine Co., while we have been given the opportunity of personally visiting the research laboratories of Messrs. L. B. Holliday & Co. It is not within our competence to compare the volume and quality of the research carried out in these various British concerns with that of the great German and American combines, but we agree with the views expressed in evidence before us that volume of trade and quality of research are reciprocal in that only a dyes industry on a large scale can provide openings and careers such as will attract the best scientific brains to the industry. Scientific genius must have its market, or it will not fructify.

Capitalisation and Management

In the matter of capitalisation it is clear to us that the British Dyestuffs Corporation, as also Messrs. L. B. Holliday and Company, the greater part of whose premises and plant was built up during the war, must be under a considerable handicap as compared with the corresponding German combination whose factories were for the most part in being before the war, except in so far as the capital of the component parts of that combination has been increased to match the depreciation in German currency as reflected in the foreign exchanges. We would observe further that not only were the German dye factories erected in pre-war periods, but the values of those factories were very largely written down out of the trading profits in previous years. That handicap will have to be overcome by British manufacturers, if at all, by relatively greater efficiency of scientific application and management. And we would remark that unless the affairs of a combination of the magnitude of the British Dyestuffs Corporation are directed with a unity of thought and purpose, there can be little hope of its competing successfully either with rival combinations in other countries or even with smaller unassociated concerns at home.

Raw Materials

Another important factor in the question of the Corporation's power to compete is its ability to obtain the raw materials for dye-making at prices not higher than those paid by its foreign rivals. This is a matter partly of ordinary business acumen, but partly also of the scope of the amalgamation and its bargaining power with the great concerns which in many cases control the supply of dye-making materials. Methyl alcohol, an important element in the production of dyes, is obtainable only from the wood-pulping countries, chiefly the United States and Canada. The price is fixed, we understand, by arrangements which exist between the manufacturers in those countries. Benzol, one of the derivatives of coal, is obtained from coal and tar distillers. Because of its fuel value and its utility as a substitute for petrol, its market price depends upon that of petrol, which is governed by the two great associations of petrol producers. The prices of most of the heavy chemicals used in the industry, as we have said, are controlled by predominent concerns in the chemical trade or by associations or agreements in that trade. Should it prove that the Corporation is at a disadvantage as compared with its German and American rivals in the price at which it is able to obtain benzol and heavy chemicals the question of extending the amalgamation in a vertical direction will have to be considered. We see no object to such extended amalgamation provided the representative character of the directorate is maintained, reflecting a balance of interests in the voting power, and provided the control over materials thereby acquired is not used to the injury of other dye-making concerns depending on the same material.

Existence of Competition with Corporation

We turn now to the question of competition between the British Dyestuffs Corporation and other dye-manufacturing concerns in this country. We have already said that in our opinion the existence within the national frontiers of independent concerns competing with the Corporation constitutes a healthy check upon the Corporation's costs of production and selling prices in the home market, and in our view nothing in the constitution, treatment, or practices of the Corporation which prejudices or disables such competitors should be allowed. The methods by which predominant firms in any industry can undermine the competing power of smaller rivals are by this time well established. Chief among them are: (1) the making of contracts binding customers to purchase the whole of their supplies from the one concern: (2) deliberately destructive temporary undercutting followed by overcharging when the smaller and financially weaker rival has been put out of action; and (3) obtaining either a monopoly or preferential terms in the purchase of the raw materials of the industry. We have dealt above with the question of raw materials. As regards destructive undercutting and the making of exclusive-dealing contracts the operations of the British Dyestuffs Corporation, so far as we have seen, do not exhibit any of these features, and in view of the balance of interests on the directorate, and the publicity to which any such developments of policy would be subjected, we do not think the dangers will materialise.

Consultation and Co-ordination

It seems to us possible that, without losing the safeguards and the stimulus that come from the continued existence side by side of the British Dyestuffs Corporation and of independent dye-making concerns, something more will be able to be done in course of time in the way of co-ordinating production, thereby avoiding needless overlapping and waste, of making both chemical research and technical experiment inter-contributory within certain limits among all the firms engaged in the industry, and of shaping a common policy for the whole of the British dye-making industry in respect of international competition. Such a development would probably take the shape either of an association of dye manufacturers or the requisite machinery may be supplied by the consultative and advisory council to be appointed under the Dyestuffs (Import Regulation) Act. We do not suggest that any development of the kind should be forced upon the industry prematurely or against the will of its leading representatives, but it is our view that if the time should come when the industry itself desires some such organisation for mutual consultation, the attitude of the public and the State should be one of support coupled with vigilance. It should be an essential part of public policy to require such an association or council as the one we foreshadow to acquaint home buyers of their products, through the medium of their trade association, with the nature and terms of any and all agreements or understandings between the manufacturers concerning prices or affecting equitableness of distribution.

Zirconia from Brazilian Ore

A New Extraction Process

REFERRING to processes for the extraction of zirconia from Brazilian ore which are based on the precipitation of zirconium as a basic sulphate, the *Iron and Coal Trades Review* states that the Rossiter and Sanders' method, which was fully described in THE CHEMICAL AGE (*See Vol.* IV., *page* 155), admittedly fails to eliminate titanium. In the process based on the preparation of crystallised zirconium oxychloride, states our contemporary, the titanium and all other impurities found in the ore are completely removed, but the process is more expensive than a precipitation process:—further, the oxychloride mother-liquor is fairly rich in zirconium, part of which is not recoverable in the pure state, because a solution heavily charged with impurities will not crystallise. On the other hand, the operation is a simple one, and can be made to yield chemically pure zirconia.

It occurred to Dr. W. R. Schoeller that the economics of a combined oxychloride-basic sulphate process might repay investigation. It gives partly pure zirconia, and a further operation yields the remainder of the zirconia practically free from iron and alumina, but contaminated with titania. Continuing, our contemporary says that, judging from the results of analyses of zirconia made by Dr. Schoeller the efforts of British manufacturers to produce a pure oxide have not been attended with success so far. The composition of the samples indicated that the ore had been opened up by fusion with nitre cake; the material was found to be strongly contaminated with arsenic pentoxide, no doubt derived from nitre cake obtained from impure sulphuric acid.

Institute of Chemistry

Recent Activities and Investigations

It is stated in Part III. of the Journal and Proceedings of the Institute of Chemistry that the publication of the memorandum prepared by the Special Purposes Committee on fine chemicals and other laboratory requirements has attracted correspondence both from users and manufacturers. Among the former a few complaints have been received with regard to quality, failure of supply and price. The manufacturers appear to have appreciated the publication of the memorandum by the Council of the Institute, who desire to help all concerned, in the belief that the future progress of chemical industry and the profession of chemistry in this country will be very largely dependent on the ability of the manufacturers to meet satisfactorily the requirements of the profession.

With the objects of recognising merit on the part of a rising member of the profession of chemistry and of keeping alive the memory of Professor Meldola, a distinguished chemical who has held office as President both of the Society presenting the medal and of the Institute of Chemistry, a medal, to be known as the Meldola Medal, will be presented annually by the Society of Maccabaeans, for the most meritorious chemical work of the year carried out by a British ubject of not more than 30 years of age at the time of the completion of the wo k. The Council hope that the first presentation of the medal will be made at the annual general meeting on March 1, 1922.

Duty-Free Alcohol

With reference to the regulations under the Dangerous Drug Act, 1920, the Councils of the Institute and the Society of Public Analysts have been informed that the Secretary of State is prepared to consider any applications for licences under the Act from Fellows and Associates of the Institute who show to his satisfaction that the drugs are needed by them for carrying out investigations arising in the course of their professional practice and employment.

Action is being taken with a view to obtaining further facilities for chemists for obtaining duty-free alcohol for analytical and research purposes. The Legal and Parliamentary Committee have suggested that when a supply of methyl and ethyl alcohol has been purchased by a chemist, he should be entitled to claim the return of the duty thereon on proving to the satisfaction of the Customs authorities that it had been used exclusively for professional or research purposes.

Blindness in Chemical Industries

At the invitation of the Committee appointed by the Ministry of Health to inquire into causes and prevention of blindness, the Council appointed Sir Robert Robertson and Mr. William Macnab to give evidence with regard to accidents causing blindness or impairment of vision, incurred among workers in chemical industries generally and in chemical laboratories of all kinds. At the request of the Committee, Sir Robert Robertson prepared some notes regarding the incidence of blindness through chemical operations. He stated that, although he had controlled at one time over a hundred chemists and a similar number of assistants engaged on the investigation of explosive substances and the determination of their properties, his experience of over 25 years did not point to such work being specially dangerous, provided due precautions were taken. In the manufacture of explosives, large quantities of acids were handled, but although accidents occurred from spillages, the frequency with which operatives escaped injury to the eye was remarkable. At the hearing Mr. Macnab said that he had very rarely known a case of blindness arising from accidents either to chemists or operatives. Mr. Pilcher, who was also questioned as to the prevalence of blindness among chemists, said that during nearly thirty years with the Institute he had not known of more than twenty cases among over 8,000 chemists.

Remuneration of Women Chemists

In the matter of the employment of women as chemists, the Council hold the view that, so far as routine work is concerned, the insistence upon equal pay for men and women of equivalent qualifications and working an equal number of hours with the same ability, would be likely to tend to the unemployment of women through preference being generally given to men, even when questions of mere economy are not of great importance. It is doubtful, therefore, they state, whether the acceptance of the principle of the equal payment of women chemists engaged in routine work would not be detrimental to their own interests. In research, and other work, however, where special individual merit is a more prominent factor, the view is held that the scale of remuneration should depend on merit and good work, and, in general, that where there is equality in these respects, there should be no distinction in salaries on the ground of sex.

Nauru Island Phosphates

Selling Arrangements in Great Britain

In the House of Commons on Monday Mr. Forrest asked the Minister of Agriculture whether he was aware of any contract made between the Phosphate Commissioners and Mr. G. V. Parker, of the Slag Phosphate Co., Ltd., Newport (Mon.); the full terms and details of such contract, and the reasons for placing the whole allocation of Nauru phosphates with Mr. G. V. Parker; whether H.M. Government was in any way interested in the Slag Phosphate Co., Ltd., and, if so, in what manner and to what extent; whether the text and tenor of this company's advertisements were calculated to mislead agriculturists to believe the substance offered was a high-grade basic slag; whether these Nauru phosphates differed in chemical composition from the rock phosphates of Northern Africa, and, if so, the nature and extent of such difference, and whether the price of 3s. per unit charged by this company was excessive and exorbitant for rock phosphates, having regard to the disastrous position which agriculture now found itself in; and whether the price of 3s. per unit was based upon cost or otherwise?

Sir A. Boscawen, in a written answer, said it was understood that the Phosphate Commissioners had entered into a contract w th the South Wales Basic Slag Co., Ltd., for the supply of Nauru and Ocean Island phosphates available for shipment from Nauru and Ocean Island to the United Kingdom between March, 1921, and the end of 1922, with a minimum of 125,000 to 215,000 tons, and that the Commissioners had also provisionally entered into a contract with the Slag Phosphate Co., Ltd., for the supply of the phosphate available for shipment during the five years 1923 to 1927, with a minimum of 100,000 to 150,000 tons per annum. In each case the selling price to these two companies was the cost price as laid down in the Nauru Island agreement, and the price at which these companies might dispose of the material was the cost price plus an agreed profit, which was a moderate one, so that agriculture would receive the fullest possible benefit from the arrangements made. Both of the companies mentioned were, he understood, represented by Mr. G. V. Parker. The information he had supplied had been furnished by the Phosphate Commissioners, who were entirely responsible for making sales of this phosphate, and he was not in a position to give any further information as to the terms and details of the contracts made between the Commissioners and the two companies concerned, in which H.M. Government were in no way interested. He was informed that the advertisements issued by the Slag Phosphate Co., Ltd., described the mixture they were placing on the market as slag phosphate, and stated that it was composed of about one-half of basic slag and the remainder of phosphates from Nauru and Ocean Island. He therefore saw no reason to suppose that agriculturists were likely to be misled into a belief that the material offered was high-grade basic slag.

An average analysis of Nauru and North African phosphates was as follows, the figures as to Nauru having been supplied by the Phosphate Commissioners :—

	Nauru phosphate. Per cent.	North African phosphate. Per cent.
Tribasic phosphate of lime	85·28	63·35
Phosphoric acid content	39·05	29·00
Lime	—	47·45
Carbonic acid	2·29	18·05
Oxide of iron and alumina under ...	1·00	1·5
Insoluble	—	4·00

The price of 3s. per unit which was being charged for the mixture of basic slag and ground phosphate was understood to be based upon cost price plus a limited profit, and compared favourably with the current prices of superphosphate and basic slag.

June Trade Returns

Further Decline in Our Export Trade

WITH the progressive slowing down of production and frequent additions to the list of suspended industrial activities it could not have been expected that the Board of Trade Returns for June would show any improvement on the low figure for May. On the contrary a further decline was practically inevitable. Under he circumstances, however, we may take comfort from the fact that the falling off was much less serious in June than in the previ us month. Now that the coal stoppage has been settled we may look forward to a certain measure of recovery, but this can hardly be looked for during the current month; the August figures should reflect a definite although probably a moderate, recovery.

Imports are nearly £2,000,000 higher than in May, due however, almost entirely to purchases of foreign coal. Exports, on the other hand, are down by nearly £5,000,000 and are the lowest recorded since March, 1918. Since January our export trade has declined by considerably more than half, the June total of £38,152,000 being £54,593,000 less than that for January. While making due allowance for the fall in prices, these startling figures furnish significant evidence of the loss our industries have suffered and of the leeway they have to make good. The following table shows the figures for the month under review compared with the corresponding month in 1913 and 1920. The decrease from 1920 is also shown :—

	1913.	1920.	1921.	Decrease from 1920.
	£	£	£	£
Imports	58,309,519	170,265,687	88,182,481	82,083,206
Exports	42,837,462	116,352,350	38,152,238	78,200,112
Re-exports	8,540,223	20,183,928	7,082,764	13,041,164

Dyes and Dyestuffs

There were again no imports of coal tar intermediates, the last imports being 563 cwt. in March, but alizarine and synthetic indigo the May imports of which were nil, amounted to 2,612 cwt. and 21 cwt. respectively. Indigo of other sorts was imported to the extent of 526 cwt. as against 357 cwt. Under the heading "extracts for dyeing," imports of cutch totalled 200 cwt. as compared with 1,508 cwt. for May and 2,616 cwt. for April. Under painters' colours and materials, ground barytes at 12,187 cwt. shows an increase of 5,200 cwt. on the previous month, and white lead (basic carbonate) at 4,323 cwt. shows an increase on the May figures of 1,438 cwt., while white lead (other sorts) fell from 134,134 to 30,396 cwt. The total value of the imports under the heading of dyestuffs and painters' colours imported during June was £162,809 or £10,996 less than the May total.

The returns give no detailed statistics regarding exports of dyes and dyestuffs, the only figures given being 3,568 cwt. of coal tar products, as against 4,018 in May, and dyestuffs of other sorts 3,645 cwt., as against 2,989. The total quantity of all dyestuffs exported during June was therefore 206 cwt. greater than in the previous month. These dyes were valued at £85,485, as compared with £75,451, the May total. Altogether, during the six months to June 30 we exported 72,997 cwt. of dyes and dyestuffs of the total value of £1,117,448; in the corresponding period of 1920, 166,479 cwt. valued at £1,661,277 were exported, and in 1913, the last pre-war period, 114,438 cwt., to the value of £164,630. These figures are of considerable interest as showing the great increase in price of exported dyestuffs since 1913.

Of barytes, 708 cwt. were exported during June, as against 466 in May; white lead, 7,200 cwt., as against 6,526, and white lead, other sorts, 51,983, compared with 53,424. The total quantity of exports under this heading amounted to 59,891 cwt., or 525 cwt. less than the previous month, and the value shows a decrease of £6,588.

Chemicals and Drugs

Imports o' chemica's and drugs showing an increase over last month's figures are given below, with the May figures in parentheses: Acetic acid (including acetic anhydride), 89 tons (67); tartaric acid (including tartrates not elsewhere specified), 2,450 cwt. (1,732); calc um carbide, 16,443 cwt. (16,230); red lead, 726 cwt. (647); nickel oxide, 85 cwt. (65); sodium nitrate, 19,800 cwt. (18,994); other sodium compounds, 76,037 cwt. (13,143); cream of tartar, 5,309 cwt. (2,869); zinc oxide, 340 tons (309). The decreases, similarly compared, are: Bleaching materials, 1,264 cwt. (4,098); borax, 400 cwt. (700); crude glycerine, 1,499 cwt. (6,362); distilled glycerine, 426 cwt. (575); potassium nitrate, 10,429 cwt. (12,380); quinine and quinine salts, 8,000 oz. (10,064); and Cinchona bark, 1,176 cwt. (3,484). The value of chemicals and drugs imported during the month totalled £557,526, as compared with £668,547 in May. The total value of these imports during the six months ended June 30 amounted to £4,907,179.

Sulphate of Ammonia Exports

During the month no sulphate of ammonia was exported to France, Germany or the United States, but a consignment of 65 tons went to Italy. Spain and the Canaries took 419 tons, the Dutch East Indies 400 tons, Japan 2,330 and the British West India Islands 1,060 tons; other exports of sulphate to countries not mentioned amounted to 710 tons. The month's exports thus amount to 4,984 tons, valued at £78,875, as compared with the previous month's figures of 6,109 tons, valued at £104,406. A comparison with the quantities of this product exported in June, 1913, shows how our trade has fallen off in this direction, for in that month no less than 22,998 tons of sulphate of ammonia were exported. The quantity exported during the six months ended June 30 this year amounted to 70,828 cwt., worth £1,791,395. Compared with the total value for the corresponding period of 1913, £2,309,693, it will be seen that the higher prices which have obtained during and since the war have almost compensated us for the decreased tonnages.

Increased Exports of Tar Oils

Turning to the other chemicals we find that the following show increases over May, the figures for the latter being given in parentheses :—Ammonia chloride (muriate), 214 tons, value £10,550 (104, £5,177); benzol and toluol, 317 galls., £62 (nil); carbolic acid, 3,921 cwt., £9,365 (1,328, £3,423); tar oil, creosote, &c., 569,290 galls., £29,031 (326,711, £20,226); crude glycerine, 5,316 cwt., £23,215 (3,674, £15,558); sodium carbonate (including soda crystals soda ash and bicarbonate) 172,428 cwt., £68,552 (138,213, £55,259); and zinc oxide, 39 tons, £2,234 (25, £1,428). The following show decreases :—Sulphuric acid 1,042 cwt., £2,689 (2,655 £4,024); tartaric acid, including tartrates not elsewhere specified, 308 cwt., £4,416 (546, £8,069); naphtha, 1,475 galls., £224 (5,294, £804); naphthalene, 3,091 cwt., £2,683 (4,952, £3,364); other coal tar products not specially mentioned, 9,246 cwt. £9,882 (22,319, £22,394); distilled glycerine, 1,669 cwt., £10,701 (2,036, £12,864); potassium chromate and bichromate, 267 cwt., £1,142 (593, £2,620); potassium nitrate (British prepared), 833 cwt., £1,971 (1,827, £3,972); caustic soda, 22,069 cwt., £24,702 (28,482, £33,898); sodium chromate and bichromate, 1,197 cwt., £3,932 (2,117, £7,202); sodium sulphate (including saltcake), 28,249 cwt., £16,862 (28,832, £12,528); and other sodium compounds, 15,644 cwt., £45,068 (34,759, £81,264).

The total value of chemicals, drugs, dyes and colours exported during June was £998,565, as compared with £1,080,417 in May; £1,648,195 in April; £1,921,806 in March; £2,000,552 in February; and £3,386,148 in January, so that it will be seen that the decline has been a progressive one during the whole of the present year to date.

Coal and Scientific Glassware

During June, as might be expected, very little coal—only 7,502 tons valued at £12,677—was exported. The May exports, it will be remembered, were very little better at 14,066 tons; the exports for the preceding months of the year were as follows :—April, 606,548 tons; March, 1,968,078 tons; February, 1,729,148 tons; and January, 1,700,106 tons.

Scientific, illuminating, optical, &c., glassware was imported to the extent of 31,632 cwt., valued at £142,736, as against 32,473 cwt., to the value of £147,999 imported in May. Exports under this heading amounted to 1,785 cwt. of the value of £31,504; the previous month's total was 2,999 cwt., valued at £47,835.

From a general perusal of the June returns, trade is found to have fallen off, more especially with France, Turkey, China, India, and the United States of America. It has been much better maintained with Holland and Belgium, and in the case of Roumania has improved.

Chemical Traders and Railway Rates

THE following correspondence has passed between the Chemical and Dyestuff Traders' Association and the Ministry of Transport on the subject of railway rates as affected by the new Railways Bill :—

22, Buckingham Gate, S.W.1.
July 2, 1921.

SIR.—Members of our Association are greatly perturbed at the possibility of interference with the exceptional rates for particular classes of traffic that have been gradually compiled as the fruits of experience over a prolonged period.

The serious general advance in railway rates already enacted has proved to be a grievous burden, and has compelled traders to divert much of their traffic from the railways. If in addition there is any cancellation of special or exceptional rates, and the whole of the goods sent per rail becomes applicable to ordinary classification, a state of chaos will be created resulting in hopeless confusion, delays and probable disaster. At present many cases can be cited where rail freights are greatly in excess of either sea or road freights, the difference being accentuated by the heavy handling, terminal and carriage charges that now apply to railway service.

When it is borne in mind that road service does not impose classification, and is more expeditious and convenient, it would seem to be very short-sighted and unwise from every point of view for any further retrograde and detrimental measures to be even contemplated in relation to railway traffic. Our Association ventures to express the strong hope that the interests of trade vital to the country will not be still more hampered and prejudiced.—Yours faithfully,

F. T. T. REYNOLDS,
Chairman of the Executive Council.

Ministry of Transport,
July 6, 1921.

SIR.—With reference to your letter of the 2nd inst., on the subject of the Railways Bill, I am directed by the Minister of Transport to inform you that as the Bill stands at present it is not proposed to cancel all exceptional rates.

When the new standard charges come into operation the then existing exceptional rates, so far as they are not covered by the additional classes in the schedule of standard charges, will be increased by an appropriate percentage addition, to be fixed by the Rates Tribunal, corresponding with the increase in the class rates. The rates so adjusted will continue subject to the last proviso in Clause 33 for a period of one year, during which period it will be open to the Traders and the Railways to agree which of the adjusted exceptional rates should be continued, with an appeal to the Rates Tribunal in case of difference. After the end of that period the Railways will still be at liberty to quote exceptional rates within certain limitations subject to their prior report to the Minister, or for the Trader to apply to the Rates Tribunal for exceptional rates if he is unable to agree with the Railway. Special provision is made (sub-clause 34 (2)), that, " a special rate for a particular contract, or for special occasion, or for a special purpose not likely to be recurrent, and in circumstances in which an immediate quotation is necessary " may be granted by the railways without such prior reference provided they are at once reported to the Minister.

The Minister is of opinion that these provisions should meet the views expressed in your letter.—I am, etc.,

F. C. GREENE.

Newport's New Industry

THE Newport Development Association announces that the ss. " Saxilby " is due to arrive at the Alexandra Docks, Newport, with a 6,000-ton cargo of phosphate from Nauru Island. From Newport this cargo will be railed direct to the works of Messrs. Baldwins, Ltd., at Panteg, Mon., where it will be ground and mixed with basic slag. The Panteg mills are designed to produce a fertiliser fine enough to pass through sieves having 10,000 holes to the square inch, a special process of grinding being employed. The rapid despatch of the phosphate at Newport Docks, where 10-ton cranes are provided alongside the ship, marks the beginning of a new and important industry. Sir A. Griffiths Boscawen, the Minister of Agriculture, recently informed the House of Commons that this new enterprise would supply a phosphatic unit at a price considerable below that of any other unit.

British Glassware Trade

Sub-Committee's Final Report

THE Sub-Committee appointed by the Standing Committee on Trusts under the Profiteering Acts, which was appointed to inquire into the operations of any combinations which might exist in the glassware and glass bottle trades, and into the effect of such combination, if found, upon prices, has issued its final report as a White Paper [Cmd. 1385, 2d. net]. The Committee's interim report on glass bottles and jars and scientific glassware has already been published, and the Committee state that as no points have arisen in subsequent evidence to cause them to make any alterations or modifications therein, they desire that the interim report should stand.

The present report states that the Committee have found no actual combination or combinations of firms controlled by one central organisation from the point of view of capital and output, but there are in existence in the domestic glassware trade two associations which represent a combination of interests on the part of the employers : the British Flint Glass Manufacturers' Association and the Northern Association of Pressed Glass Manufacturers. Both these Associations regulate selling prices and are in a position to exercise considerable influence in this respect. They have no evidence to show that the British Flint Glass Manufacturers' Association have acted or is acting unreasonably.

The views on the subject of optical glass were similar to those they held with regard to the production of scientific glassware, and they considered that such temporary support should be afforded to this industry as was consistent with fairness to consumers. There was no evidence of the existence of any association of illuminating glassware manufacturers having for its object the fixing of prices.

R. Berk & Co. : Meeting of Creditors

ROBERT BERK (trading as R. Berk & Co.), 10, City Road, E.C., who formerly traded as a chemical merchant, attended the first meeting of his creditors at the London Bankruptcy Court, on July 15. He stated that in April, 1914, he began business as a chemical manure merchant at 26, Long Acre, but closed down in January, 1915. There were no liabilities outstanding in respect of that business. In September, 1916, he was given the use of offices in Audrey House, Ely Place, where he began as a chemical merchant under the style of R. Berk & Co. He carried on this business until February, 1917, when he joined the Army, and it was in respect of that business that the present receiving order had been made. Since leaving the army he had been in employment. No statement of affairs had been lodged, but the debtor estimated his liabilities at £500. The assets consisted of office furniture £10, and book debts £344, of uncertain value. The case was left in the hands of the Official Receiver for administration in bankruptcy.

Deals in Tartaric Acid

ON July 7 in the Commercial Court of the King's Bench Division, Mr. Justice Bailhache dealt with an action brought by C. W. Field, Ltd., of Wood Street, Liverpool, against Samuel Lambert & Co., of Mincing Lane, E.C., in which the plaintiffs sought to recover balance of the price of 10 tons of tartaric acid powder and tartaric acid crystals sold to the plaintiffs. Mr. Doughty, for the plaintiffs, said the defendants did not appear and he understood they did not propose to defend the case. The plaintiffs were chemical manufacturers and the defendants were chemical merchants. Certain questions arose in the transaction and these were submitted to arbitration. The award went in the plaintiffs' favour, but the defendants were not able to comply with its terms. The matter was, therefore, compromised, the plaintiffs taking back the 10 tons and selling them on defendants' behalf, the latter being credited with the proceeds, with £18 allowed by the arbitration. The action was brought to recover the balance of £1,878 6s. 8d.

Judgment was given for the plaintiffs for that amount, with costs.

Increased Dye Prices, 1914-1921

The following schedule appears in the Report on the Dyestuffs Industry :—

PERCENTAGE INCREASES IN THE PRICES OF CERTAIN DYES BETWEEN 1914, 1920 AND 1921.

	Increase over July, 1914.	
	July, 1920. %	March, 1921. %
WOOL COLOURS.		
Aliz. Sapphirole type	343	306
Wool Navy Mixings	700	716
Fast Acid Red type	921	1017
Coomassie Navy Blue type	921	580
Xylene Lt. Yellow	639	681
Blue Blk. Base type	700	797
Gallocyanine	500	816
Oxford Blue type	831	866
Union Navy type	400	411
Patent Blue type	808	900
Acid Green type	888	760
Tartrazine type	1071	1655
Acid Black type	727	880
Orange G. type	1024	1110
Chrome Greens	935	—
Bright Acid Violets	821	904
Aliz. Blue OCR type	172	—
Omega Chrome Red type	477	—
Brill Delphine Blue	524	536
Acid Anthracene Blks.	420	634
Common Acid Reds	1600	—
Orange II. type	980	862
Chrome Blues	560	817
Aliz. Reds	358	232
Acid Scarlets	570	470
Sulphon Blk. type	725	813
TS Standard Mixings	582	447
COTTON COLOURS.		
Direct.		
Diazophenyl Black V.	890	—
Dianol Black D.V.	1100	500
Direct Fast Blk. B.	1161	917
Dianol Fast Black 9136K.	1726	1048
Melanthrene B.H.	884	669
Dianol Black, B.H.	1008	700
Chloramine Black B.H.	1017	823
Chlorazol Blue B.	500	500
Chlorazol Sky Blue F.F.	1973	1536
Direct Sky Blue G.S.	1536	1064
Dianol Fast Blue 2B.	880	723
Dianol Brown 2494K.	475	475
Trisulphone Brown B.	500	543
Chlorazol Green B.D.S.	728	728
Direct Green B.	546	592
Direct Fast Orange S.E.	1209	1000
Pyrazol Orange G.	790	745
Primuline	900	900
Congo Red	906	482
Congo Rubine	700	668
Dianol Fast Red F.	1465	1465
Dianol Fast Pink B.K.	855	681
Dianol Fast Red K.	1206	1206
Chloramine Brill Red 8B	1166	700
Direct Fast Scarlet S.E.	1087	763
Chrysophenine	1566	900
Cotton Yellow C.H.	1655	1056
Oxyphenine R.	1050	1050
Direct Violet N.	919	1043
Basic.		
Methylene Blue 2B.	1180·5	905
Victoria Blue B.	1278·5	1107
Brilliant Glacier Blue	411·7	411
Magenta	1045·4	854
Rhodamine 6G.	1677·7	1500
Rhodamine B.	2300	2150
Methyl Violet 2B. conc.	1565·3	1026
Auramine O. conc.	996	996
Malachite Green	1323·7	1323
Sulphide.		
Cross Dye Black J.N.I.	330	251
Cross Dye Black J.N.S.	270·7	251
Cross Dye Black R.R.	250	200
Pyrogene Direct Blue	700	661
Theonol Brown G.D.	448·1	448
Theonol Khaki No. 1	154·5	154
Cross Dye Green 2G. xtra.	721	721
Cross Dye Green B.	242·8	242
Theonol Corinth GX.	575·5	300
Vats.		
Cibanone Black B.	732	732
Duranthrene Blue F.C.	1029·4	268
Caledon Green B.	685·4	685
Cibanone Orange R.	700	700
Durindene Red Y.	583·3	727
Chloranthrene Red 5G.	811·1	1322
Ciba Violet B.	806	568
Duranthrene Violet R.N.	681·1	681
Duranthrene Red Violet 2 R.N. xtra	344	344
Chloranthrene Yellow G.	585	585

Penrol : A Gasoline Substitute

A South African company has been formed for the production and marketing of "penrol," a GASOLINE SUBSTITUTE. The new fuel will be made principally from alcohol obtained from locally-grown maize or corn. It is reported that the selling price will be considerably below that of gasoline, and it has been claimed for the new fuel that it is non-corrosive, smokeless, stainless, does not carbonise, and has no smell.

The Railways Bill

Traders and Exceptional Charges

IN the House of Commons on Tuesday, Standing Committee "B" discussed the portion of the Railways Bill dealing with the question of railway rates.

Mr. Betterton moved an amendment to provide that the Rates Tribunal shall review the standard charges and exceptional rates, on the application of any amalgamated company or of any representative body of traders, provided that effect shall not be given to any such review until the expiration of twelve months after the last preceding review. When making any such review the Rates Tribunal, after hearing all parties interested, and taking into account any considerations which appear to them to be relevant, shall recommend such general modification of the standard charges and exceptional rates as they shall think fit, and such recommendation shall be laid upon the table of the House of Commons, and not be brought into operation otherwise than by resolution of the House. Such general modification shall apply to the then existing exceptional rates in the same proportion as the increase or decrease in the corresponding standard charges.

After a lengthy discussion the amendment was defeated by 38 votes to 3.

Synthetic Nitrogenous Fertilisers in Germany

THE recent addition of 700 million marks to the capitalisation of the chief German dye companies promises well for the future of the nitrogen-fixation industry, since all the associated firms have expressed their intention to allocate a considerable proportion of the new capital to the development of the nitrogen works. Prior to the war the annual production of nitrogen was about 100,000 metric tons, derived from gas and coke-oven installations ; to-day these undertakings supply only a small proportion of the total output (gas works about 5 per cent.). In a recent review of the subject, Dr. Bueb, managing director of the Nitrogen Syndicate, stated that the annual production of cyanamide was limited to about 100,000 tons (fixed nitrogen), that the maximum annual output capacity of the synthetic ammonia plants was at present about 300,000 tons, and that of the gas and coke-oven plants about 100,000 tons ; total 500,000 tons of fixed nitrogen. The days of the use of Chile saltpetre in German agriculture are clearly numbered. Whereas in 1913, 770,000 tons was imported, the imports in 1920 were at the rate of only 40,000 tons per annum (January-October, 31,284 tons). This reduced importation meant a clear saving to the German people of over 2,000 million marks at the current rate of exchange.

It is worthy of note that agriculturists have at last become convinced that sulphate of ammonia is the equal of Chilean nitrate in fertilising value. A good deal of ammonium nitrate is now being used, the difficulties due to its hygroscopic nature having been overcome ; but the future seems to lie with synthetic urea, on account of its very high nitrogen content, its harmlessness when applied too heavily, and its good keeping qualities ; large-scale experiments with it are now being conducted in Bavaria, and results should be available by the end of the year. Hopes are entertained that heavy dressings of nitrogenous fertilisers will help to revive the fallen sugar-beet industry and bring new life to the pastures. Professor Neubauer, of Bonn, has shown the remarkable value of such heavy applications : within four weeks 65 per cent of the nitrogen applied was converted into vegetable albumin, and if such results can be achieved on the large scale a pasture will be able to support twice as much livestock as hitherto. In order to promote intensive cultivation with nitrogenous fertilisers, the Nitrogen Syndicate has formed a subsidiary company with a capital of 500 million marks to advance loans to consumers. Dr. Bueb is not in favour of utilising water-power in the nitrogen industry, except in a few of the cyanamide works, as the supply is small and far too fluctuating.—J. S. C. I.

THE LIQUEFACTION OF COAL which has puzzled many eminent scientists in all parts of the world, is claimed to have been successfully carried out by a gentleman living in the vicinity of Sheffield. It is stated that the inventor "desires for the time being to remain anonymous."

Soda Ash Litigation

Breach of Contract Claim Settled

IN the King's Bench Division on July 1, Mr. Justice McCardie gave judgment in the case of the Diamond Alkali Export Corporation of New York, against Fl. Bourgeois, of Great St. Helens, E.C.

The matter came up on a question under an award stated by an arbitrator, and arose out of a contract under which the plaintiffs sold to the defendants 50 tons of soda ash dense, 58 per cent. heavy alkali, and 98 per cent. carbonate, New York and Liverpool test, for September and October (1920) shipment from America, at four dollars 70 cents per 100 lb., c.i.f. to Gothenburg. The sellers' case was that they were excused from shipping within the time specified and that the buyers committed a breach of contract in refusing delivery. The buyer replied that the goods were not shipped till November, and the sellers did not present a proper bill of lading and the proper policy of insurance. The arbitrator asked the Court to decide the question as to whether the buyers had committed a breach of the contract and the sellers were entitled to £1,242 as damages.

His Lordship, in giving judgment, said the effect of the strike clause was to enable the sellers to ship at a later date, and he found in favour of the sellers on that point. But then it became his duty to decide as to whether the documents could be said to have been delivered in such a way as to complete the performance of a c.i.f. contract. Dealing with the bill of lading and having regard to the definition of the meaning of a true bill of lading, he could only come to the conclusion that this was not one which showed an acknowledgment of the receipt of goods on a particular and specific ship, but a receipt for goods which assumed a future shipment. By this the buyer was left in doubt as to the actual shipment and the actual ship on which it was to be conveyed. He also felt that the certificate of insurance was not the policy of insurance itself, and was an unclassified document. Under these circumstances, he found in favour of the buyers, the sellers to pay the costs.

Dyestuffs Development Committee

IN accordance with the provisions of Section 2 (6) of the Dyestuffs (Import Regulation) Act, 1920, the President of the Board of Trade has appointed the following, together with another representative of dye-using interests to be appointed shortly, to be a committee to advise the Board of Trade with respect to the efficient and conomical development of the dye-making industry :—

Mr. W. J. U. Woolcock, C.B.E., M.P. (Chairman) ; Mr. Percy Ashley, C.B. (Board of Trade) ; Sir Henry Birchenough, Bart., K.C.M.G. ; Mr. W. H. Dawson ; Mr. George Douglas ; Mr. E. V. Evans, O.B.E., F.I.C. ; Dr. M. O. Forster, F.R.S. (Director of the Salters Institute of Industrial Chemistry) ; Mr. L. B. Holliday ; Dr. Herbert Levinstein, F.I.C. ; Professor G. T. Morgan, F.R.S. ; Mr. James Morton, Mr. Max Muspratt, Mr. Thomas Taylor, Mr. Norman Thomas (Admiralty), Mr. G. S. Witham (War Office).

Affairs of Bathgate Polish and Chemical Co.

THE statutory meeting of the creditors of the Bathgate Polish & Chemical Co., Ltd., Bathgate, was held recently, when a statement of affairs was presented which showed liabilities of £455 10s. The assets were estimated to realise £225, from which had to be deducted £79 11s. 9d. for preferential claims, leaving net assets of £145 8s. 3d., or a deficiency of £310 1s. 9d. The assets were as follows : Stock, furnishings and fittings, valued at £200, and book debts £94 5s. 9d., valued at £25. The company, it was stated, was formed in October, 1920, with a nominal capital of £2,000 divided into shares of £1 each. If the business could be disposed of as a going concern the assets might realise considerably more than the figures stated. No profit and loss account had been prepared since the incorporation of the company. Very little business had been done recently. The creditors passed a resolution confirming the liquidation of the company, while two of the principal creditors were appointed to assist the liquidator in the winding up.

Carbide Contract Appeal

Court Adjourns Hearing

THE Court of Appeal, consisting of Lord Justice Bankes, Lord Justice Warrington and Lord Justice Scrutton, commenced on Tuesday the hearing of an appeal by the Canada Carbide Co., Ltd., defendants, and a cross-appeal by the Acetylene Corporation of Great Britain, Ltd., plaintiffs, from a judgment of Mr. Justice Rowlatt, given on March 9, 1921, in an action for damages for alleged breach of contract by the defendants to ship large quantities of calcium carbide from Canada to the United Kingdom for resale by the plaintiffs to the Government. (*See* THE CHEMICAL AGE, Vol. IV., pp. 290 and 309.)

The defendants set up that the contract had been frustrated and put an end to. Mr. Justice Rowlatt found against the defendants in respect of the claim for non-delivery on the ground that although the contract was suspended it was not ultimately frustrated, and on two other points, breach of contract to give plaintiffs' control of defendants' business for a period and to give them the refusal of goods for a year after the termination of the contract, his lordship found in defendants' favour.

Mr. R. A. Wright, K.C., and Mr. Jowitt and Mr. E. A. Hawke appeared for the appellant defendants, and Mr. Hogg, K.C., and Mr. Doughty for the plaintiff respondents.

Mr. Wright said the main issue was set out in the defence, namely, that the obligation to deliver the goods was suspended by the operation of a suspension clause in the contract, and the main ground which was relied on in connexion with suspension was inability to procure tonnage or freight. On that issue of inability to obtain freight a commission was ordered by this Court, which went out to Canada, and a body of evidence was obtained. Counsel submitted that the suspension was of such a character as to involve a frustration of the contract, on the principle laid down in a number of cases that the defendants were entitled to succeed altogether on the claim against them for damages because it was found that there was a suspension till July, 1920, and he submitted on the ground of frustration that the defendants had an answer to the whole case.

Mr. Doughty said if the Canada Company had treated the plaintiffs with frankness they might have got the Admiralty to ship all the carbide they could have supplied. There was no difficulty to the plaintiffs in getting carbide over, but there might have been difficulty to the ordinary carbide merchant.

The hearing was adjourned.

Grease from Sewage

AT the Annual Summer Conference of the Association of Managers of Sewage Disposal Works, held in Bradford on July 9, Mr. J. A. Reddie, chemist and manager of the Bradford Sewage Disposal Works, referring to the peculiar qualities of Bradford's trade effluent, and to the manner in which the Corporation had turned this to profitable account, said that during the war period their revenue from the extraction of grease amounted to over £100,000 a year. The grease, after being purified, was sold to distillers. The pressed cake (from the sludge), amounting to 400 or 500 tons per week, with an average nitrogen content of 2 per cent. on the dry solids, was sold for fertilizing purposes at from 10s. to 20s. per ton, according to the state of the market.

Mr. Joshua Bolton then read a paper on "Activated Sludge Experiments at Bury," which was followed by a discussion, in which Messrs. W. H. Duckworth, J. H. Garnett, W. H. Makepeace, J. Edmondson, and Dr. Wilson took part.

Receipts by Post

THE Secretary of the General Post Office states that written receipts for money (whether on cards or on sheets of paper) which are not on printed forms are liable to the letter rate even though enclosed in open covers. If a receipt is to go for a penny it must "consist of a printed form, and any writing refer solely to its subject matter, or consist of formulas of courtesy or of a conventional character not exceeding five words or initials." The same conditions apply to commercial or business papers of a formal character, such as invoices, orders for goods or for work to be done, confirmation of orders, and numerous other documents.

Anti-Dumping Provisions

Discussions in Committee

On Tuesday evening the House of Commons went into Committee on the Bill.

Mr. Kiley moved the omission of sub-section 2 of Clause 4, which provides for the remission of the duty when goods are sold in this country at a price not less than the cost of production, or where there has been a change in the market conditions of the country of manufacture. Sir P. Lloyd-Greame said the sub-section was a necessary part of the machinery dealing with the prevention of dumping.

On a division the amendment was defeated by 215 to 71.

An Inquiry Committee

On Clause 7, which provides for the appointment of an Inquiry Committee under the anti-dumping part of the Bill, Captain W. Benn moved that the Committee should be a Select Committee of the House instead of a Committee appointed by the Board of Trade. The House was the taxing authority and had no right to delegate its powers to an out ide body. The amendment was supported by Dr. Murray and Lieut.-Commander Kenworthy.

Mr. Baldwin, replying after a lengthy discussion, said that at a later stage he would move an amendment increasing the Committee from three to five. He also proposed to include on the panel, from which the Committee was drawn, members of the legal profession and a number of representatives who had special knowledge of economics and finance. The debate was continued and at 10.30 p.m. the guillotine fell on Clause 7.

The House divided on the amendment, which was defeated by 224 to 78.

The motion that Clause 7 as amended by the Government stand part of the Bill was carried by 275 to 73.

Cost of Production

When the House went into Committee on Wedn esday several amendments had been tabled with regard to Clause 8 which deals with the meaning of the expression " cost of production." The clause provides that " cost of production " means the current sterling equivalent of (*a*) the wholesale price at the works charged for goods for consumption in the country of manufacture ; or (*b*) if no such goods are sold for consumption in that country the price which, having regard to the prices charged for goods as near as may be similar, when so sold or when sold for exportation to other countries, would be so charged if the goods were sold in that country, after deducting in either case any excise or other internal duty leviable in that country.

Mr. T. Thomson moved to substitute for the word " wholesale " at the beginning of Sub-section A, the words "90 per cent. of the lowest."

Sir P. Lloyd-Greame said that while he could not accept the amendment, another would be moved for the Government making an allowance of 5 per cent.

The amendment was negatived.

Captain W. Benn moved to delete the sub-section which lays down that the cost of production of goods which are not sold for consumption in the country of manufacture shall be " the price which, having regard to the prices charged for goods as near as may be similar when so sold or when sold for exportation to other countries, would be so charged if the goods were sold in that country."

At seven o'clock the guillotine resolution came into operation, and on a division the amendment was rejected by 271 votes against 86.

Clause 8, as amended, was added to the Bill, the voting on the division being 265 for and 82 against, leaving a Government majority of 183.

Valuation for Duty

In a division on Clause 9, 260 votes were for the clause and 77 against, giving a Government majority of 183.

On Clause 10 which deals with the valuation of goods for the purpose of duty, Mr. T. Thomson moved an amendment to the effect that the price should be the price at the port of shipment.

On a division the amendment was defeated by 135 votes to 75.

Chemical Matters in Parliament

Safeguarding of Industries Bill

Replying to Captain W. Benn, Mr. Baldwin said he thought there were sufficient consular officers to fulfill, without undue inconvenience to traders, the duties cast upon them by Clause 4 and other Clauses of the Bill.

In reply to Mr. T. Thomson, Mr. Baldwin said he proposed to make a statement on the proposed limits on the terms of reference to Committees set up under Clause 7 of the Bill to inquire into cases of alleged dumping.

Answering a question by Mr. Galbraith, Mr. Baldwin said the goods of any class or description referred to in Clause 2 of the Bill included partly manufactured articles.

Mr. Kiley asked the Financial Secretary to the Treasury whether, in the valuation of articles which had been exported to undergo processes abroad, the duty would be levied by the Board of Trade under Clause 3 of the Bill on the cost of the transport of the article outward and homeward as well as on the cost of the foreign process ?

Mr. Baldwin said duty was leviable in such cases on the difference between the value of the goods when received back in this country and the original value of the goods free on board when exported for further manufacture. The answer to the question was therefore in the affirmative.

In reply to Captain W. Benn, he would not say that we were imposing a duty of 33⅓ per cent. on the British shipping industry so far as this matter was concerned.

Certificates of Origin

Replying to Mr. Glanville (House of Commons, July 11), Mr. Baldwin said that the cost of certificates of origin under Clause 4 of the Bill would be borne by the exporter, who would pay the fee to the Consular Office concerned.

Asked by Mr. Wintringham what course was open to traders who were unable to find in the district from which they imported goods a Consular office which could supply a satisfactory certificate of origin, Mr. Baldwin said he did not anticipate that the exporter on whom would fall the onus of procuring any certificate of origin that might be required, would find any great difficulty in ascertaining the nearest town in which a Consular officer resided.

Mr. Acland then asked whether, under Clause 2 of the Safeguarding of Industries Bill, employment in any industry was held by the Board to mean in any industry complaining of the dumping of foreign goods ; or whether the Board would hold that it included any industry interested in the import of foreign articles at the lowest price ?

Mr. Baldwin said the answer to the first part of the question was in the affirmative, but he proposed to make a statement when the Bill came up on report as to the questions which would be referred to the Committees to be set up under the Bill.

Mr. Kiley asked on what grounds the Board of Trade would decide, under Clause 1 of the Safeguarding of Industries Bill, whether the person complaining that articles had been improperly included or excluded from the Schedule was, in fact, a person interested ?

Mr. Baldwin said he did not anticipate any difficulty in ascertaining whether a person was interested in securing that duty should or should not be levied on goods of any particular description.

Replying to Capt. Wedgwood Benn (House of Commons, July 7), Mr. Young said that no account had been taken in the Budget Estimate for this year of any revenue that might be derived from the duties imposed by the Safeguarding of Industries Bill.

British Cellulose Company

Sir J. Allen (House of Commons, July 11) asked the Chancellor of the Exchequer the names of the two Government directors on the board of the British Cellulose & Chemical Manufacturing Company, in which the Government held 1,450,000 preference shares ; what salaries they had in addition to the £500 per annum as directors ; what qualifications they had for the manufacture of the products of this company ; whether they sanctioned the issue of £3,000,000 preference shares last year ; whether the issue was made on the promise that 9 tons of artificial silk would be made per day ; whether this promise had been fulfilled ; whether these two Government directors had sanctioned the borrowing of a further sum of £250,000 from the bank and for what purpose ; whether all

the machinery was working; whether he would inquire from the two Government directors if it was the intention of the company to ask the public for more money and for what purpose; whether it was the intention of the Government that these two directors should continue drawing £500 per annum each when no dividends were available; whether this was the company which sold its 6d. shares to the public for £14 each; if he could arrange for three Members of the House to visit these works; and from whom the present stock for manufacturing purposes was purchased, the total value on date of purchase, and the value at July 1, 1921?

Mr. Young said the two directors of the British Cellulose & Chemical Manufacturing Co., Ltd., representing the Government were Sir William Alexander and Sir Philip Henriques. The first of these gentlemen had wide commercial experience and was also a trained chemist, and the second formerly acted as an Assistant Financial Secretary to the Ministry of Munitions. The Government were cognisant of the proposed issue of shares and took no exception thereto. With regard to the output of the company, 9 tons per day would ultimately be made when market conditions permitted. The borrowing of the additional sum mentioned in the question was agreed to by the Government directors in common with their colleagues on the board, and was effected for the general purposes of the company. The plant was not working to full capacity, but many other commercial undertakings were in the same position at present. The question of further issues was, of course, a matter which rested with the board of directors generally, but at present there was no suggestion of this arising. The fees of the two directors payable by the company were payable into the Exchequer, and the only salary they received—namely £500 each—was paid direct by the Government. The question as to 6d. shares did not apply to this company. He was advised that it was thought the company would welcome a visit from three Members of the House, provided, of course, that the visitors had no direct or indirect competitive interests in the trade. He had no information on the points raised in the last two lines of the question.

Fuel Research

Sir W. Davison (House of Commons, July 11) asked the President of the Board of Trade whether, in view of the great interest now being taken in the economical use of coal, he could state what results have been obtained from the researches carried out at the fuel research station at Greenwich; what was the staff at work at the station; and what was the annual outlay in connexion with the same?

Mr. Balfour, who replied, said it was not possible within the limits of an answer to a question to give the results of the research into the national problems which the Fuel Research Station was established to investigate. Papers on certain aspects of the large question of fuel economy had already been issued.

A review of some of the more important work of the station was given by the Director in the "James Forrest" Lecture before the Institution of Civil Engineers on June 28. The scientific and technical staff of the station consisted of 12 persons, the industrial and clerical staff of 77. The estimated net cost of the station for the current financial year was £44,000.

In reply to a further question by Sir H. Brittain, Mr. Balfour said work had been carried out at the station on a sufficiently large scale to be able to judge of the manufacturing and economic possibilities involved.

German Reparation (Dyestuffs)

Sir W. Barton (House of Commons, July 13) asked the President of the Board of Trade what was the weight of colouring matter and synthetic dyestuffs received from Germany under the Reparation Clauses of the Treaty of Versailles up to June 30, 1921, and at what value these were credited to Germany; and would he say what was the weight distributed to consumers and the total amount charged therefor?

Sir W. Mitchell-Thomson said the total quantity of synthetic dyestuffs and colouring matter received from Germany under the Reparation Clauses of the Treaty of Versailles up to June 30, 1921, was 4,053 tons; the value credited to Germany up to March 31, beyond which date figures had not yet been furnished by the Reparation Commission, was approximately 110,000,000 paper marks, to which must be added cost of carriage, storage and distribution. The total sales, including those to India and the Dominions, amounted to about 1,068 tons, of a value of £710,643.

British Farina Mills, Ltd.

Sir T. Polson (House of Commons, July 13) asked the Chancellor of the Exchequer whether the loss to the public of the Food Ministry engaging in farina production might now be placed at approximately £500,000; whether the pre-war price of this commodity was about £26 a ton; whether the cost of production by British Farina Mills, Ltd., was nearly £130 a ton; who were the directors of this company; whether any officials of his Department investigated the matter before sanctioning the outlay; and, if so, what were the terms of their report on the matter?

Sir W. Mitchell-Thomson said the circumstances in which the Government undertook to subsidise the manufacture of farina during the war were now being considered by the Public Accounts Committee, and he would suggest that the inquirer should await their report.

Import Duties

Mr. Briant (House of Commons, July 11) asked the President of the Board of Trade what was the maximum duty that could be levied on any article under the provisions of the Safeguarding of Industries Bill, the German Reparation (Recovery) Act, and the existing tariff?

Mr. Baldwin said no duty was leviable under the German Reparation (Recovery) Act. Part of the cost of the goods was payable to the Customs, but this sum was recoverable by the exporter from the German Government. On the passage of the Safeguarding of Industries Bill the maximum duty leviable on any article would be 66⅔ per cent. or 33⅓ per cent. in addition to the existing specific duties, whichever might be the higher. It was not possible to say what might be the maximum *ad valorem* equivalent of existing specific duties.

Settlement of Enemy Debts

In reply to Captain W. Benn (House of Commons, July 7), who asked what was the reason for the delay in the settlement of enemy debts through the Clearing Office, Mr. Baldwin said there was no avoidable delay on the part of the British Clearing Office in the settlement of enemy debts. On the 15th of each month the British Clearing Office paid all debts of which it had received notice of admission from the German Clearing Office during the preceding month. The amount so paid up to June 15, 1921, was £23,818,984 19s. 8d., and a further sum of £1,662,013 14s. 8d. would be paid on the 15th instant.

Lincoln Farina Factory

Mr. Mosley (House of Commons, July 6) asked the President of the Board of Trade the amount of the Government expenditure on the farina factory established at Lincoln in 1917; the amount of farina produced by the factory and its sale price; whether the factory, or any portion of it, had been disposed of; and the amount realised by the sale?

Sir W. Mitchell-Thomson said the information had been published in Command Paper No. 1368 (*see* THE CHEMICAL AGE, Vol. 5, page 8).

Oil Fuel

Major Kelley (House of Commons, July 6) asked the Minister of Transport whether the use of oil fuel on the railways had been a success, having regard to cost and efficiency?

Mr. Neal said sufficient experience had not yet been acquired to enable accurate comparisons to be effected in respect of costs and efficiency as between the use of oil fuel and coal on the British railways.

Palm Kernels

Replying to a question by Captain Wedgwood Benn (House of Commons, July 11), Mr. Baldwin said no differential export duty on palm kernels was imposed in territories held under a mandate.

On Monday morning there was an OUTBREAK OF FIRE on the premises of Townson & Mercer, Ltd., chemical apparatus manufacturers, due to some burning rubbish. Owing to the promptitude of the London Fire Brigade, the fire was confined to a yard in the rear, where three cases of glass instruments were destroyed.

From Week to Week

Shareholders in the Aguas Blancas Nitrate Company are receiving A DIVIDEND of 100 per cent. for the past year.

Mr. H. H. WILLS has presented £200,000 to Bristol University to build and equip a NEW PHYSICS LABORATORY.

It is announced that Professor Edouard Branly, of Paris, is to receive this year's NOBEL PRIZE for physics.

The Council of the ROYAL SOCIETY OF ARTS have decided that in future the Colonial Section of the Society shall be known as the Dominions and Colonies Section.

Mr. EDWARD J. CORNISH, Chairman of the National Lead Co., of the United States of America, is at present in England in the interests of his Company.

The Edinburgh works of the NORTH BRITISH RUBBER COMPANY, which were closed owing to the coal stoppage, were partially re-opened on Monday. Before the strike over 4,000 hands were employed.

Fifty tons of soap was included in a cargo of Australian produce which arrived at Swansea recently. Australia is making great efforts to secure a market in this country for its soap products, which have been extensively advertised of late.

The Explosives and Chemicals Section of the Disposals Board have still FOR DISPOSAL, quantities of mixed nitric and sulphuric acid; barium nitrate; benzyl bromide; calcium nitrate; calcium silicide; chlorpicrin; ferro-silicon; methyl acetate; potassium perchlorate; picric acid; and saltpetre

The Hydrogen, Oxygen & Plant Co., Ltd., whose temporary offices were at 20, Bury Street, S.W.1, have now moved into their permanent quarters at Albemarle Mansions, 1, Albemarle Street, Piccadilly, W.1. The telephone number is now Gerrard 986.

With reference to the particulars of a rubber control scheme, and the approaching formation by the Rubber Growers' Association of a "Rubber Producers' Corporation," Mr. Frank G. Smith, the secretary of the R.G.A., states that no scheme has yet been finally approved by the Output Control Committee.

The Hull magistrates on Monday made an order upon the Hull Fish Manure and Oil Company requiring them to abate a nuisance, but in order that improvements might be effected they granted the company twelve months' grace. The Corporation called evidence as to PUNGENT ODOURS offending the city. The defendants maintained that the works were serving a useful purpose in destroying fish refuse.

At the meeting of the Royal Society of Edinburgh held on July 4, the following were elected honorary fellows:—BRITISH HONORARY FELLOWS: William Henry Perkin, Sir Ronald Ross, Sir Jethro J. H. Seall, and Sir Ernest Rutherford. FOREIGN HONORARY FELLOWS: R. A. Daly (Cambridge, Mass.), J. Hjout (Bergen), C. L. A. Laveran (Paris), H. K. Onnes (Leyden), and S. Pincherle (Bologna).

A FIRE which caused considerable damage broke out on July 7 at the premises of W. J. Bush & Co., Ltd., manufacturing chemists, 35, Mare Street, Hackney, through a light being thrown down. The official report states that a quantity of stock was severely damaged by fire in the yard, and nearly half of the contents of the ground floor of one building, used as offices and stores, was damaged.

The senior students of the Chemical, Building and Music Trades Departments of the Northern Polytechnic Institute held their sports at Tufnell Park on July 4. Mr. W. J. U. Woolcock, C.B.E., M.P., General Manager of the Association of British Chemical Manufacturers, presented the prizes to the successful competitors. Keen racing was seen and excellent times were recorded.

The 66th ANNUAL EXHIBITION of the Royal Photographic Society of Great Britain will be held from September 19 to October 29 at 35, Russell Square, W.C.1. There will be three sections, devoted respectively to pictorial photographs, to colour transparencies and colour prints, and to scientific and technical exhibits, natural history photographs, and lantern and stereoscopic slides.

A verdict of ACCIDENTAL DEATH was returned at an inquest last week on Charles Alfred Ball, metal broker, of Queen's Road, Leeds, who died while dismantling a pump which he had purchased from Messrs. H. Sharp & Son, manufacturing chemists, Park Mills, Armley. It appears that the platform over the well collapsed and he fell a distance of 45 yards. When the body was recovered two hours later life was extinct.

Experiments have been conducted in Western Australia for some time past with a view to making PAPER PULP from the waste products of the timber mills, and it is hoped soon to turn out paper of all kinds. Alkali exists in large quantities in the State, and the Agent-General for Western Australia is in receipt of numerous inquiries from persons interested in the opening up and exploiting of this new product.

AN ARTIFICIAL IRON ORE has been developed by the United States Bureau of Standards for use in the steam-iron process of hydrogen generation. This material is made by impregnating a porous earthenware supporting body of approximate shape with iron nitrate and decomposing it to the oxide. Laboratory experiments on a limited scale indicate that this material is far superior to a natural iron ore for the purpose of producing hydrogen.

H.M. Consul-General at Buenos Aires intimates that an importer in that city wishes to secure agencies on a commission basis from United Kingdom firms for measuring glasses, bottles, glass tubes, clinical thermometers, &c. The name and address of the inquirer will be furnished to United Kingdom manufacturers and exporters on application to the Department of Overseas Trade. The reference number, D.O.T. 4130/FL/SC(2), should be quoted.

The American Cyanamid Co. reports that during May operations were at REDUCED CAPACITIES at all plants. Manufacturing operations at the Ammo-Phos. Plant were completely suspended. At the Cyanamid Plant at Niagara Falls the operations were on the basis of approximately 45 per cent. of capacity. At the phosphate mines at Brewster, Fla., the mining operations were on the basis of approximately 43 per cent. of capacity.

Damage computed at £1,500 was caused by an OUTBREAK OF FIRE which occurred on July 9 at the chemical works of Messrs. R. & J. Garroway, chemical manufacturers, of 694, Duke Street, Glasgow. The fire originated in a packing room used as an oil store, and owing to the inflammable nature of the contents, the building was rapidly destroyed, and the roof of an adjoining building used as an engine shop was burned off. The fire was extinguished by four detachments of the Glasgow fire brigade.

An election to the ACKROYD MEMORIAL RESEARCH FELLOWSHIP in the University of Leeds is to be made shortly. The selected candidate will be expected to carry out an approved scientific investigation of a biological, physical, or chemical nature bearing directly or indirectly upon the production of properties of wool or other textile materials, or upon the manufacture of textile fabrics. The fellowship is of the annual value of £300. It is tenable for one year, and renewable for a second or third year. Applications should be made to the Registrar of the University by July 28.

The Overseas University delegates, who came over to attend the Conference at Oxford, paid a three days' visit to Cambridge as the guests of the University, and were entertained at the various colleges. The Vice-Chancellor, Dr. Peter Giles, held a reception in their honour on Saturday evening, and on Monday and Tuesday the colleges and laboratories were visited under expert guidance. The Cavendish physics laboratory was shown by Sir Ernest Rutherford and the chemical laboratory by Sir William Pope. The Vice-Chancellor entertained the visitors at a farewell luncheon on Tuesday, after which the party left for Edinburgh.

MEDALS have been awarded by the Royal Society of Arts for the following papers read before the Society during the past session:—Major-Gen. Lord Lovat, "Forestry"; Col. R. J. Stordy, "The Breeding of Sheep, Llamas, and Alpacas in Peru, with a View to Supplying Improved Raw Material to the Textile Trades"; A. F. Baillie, "Oil-burning Methods in Various Parts of the World"; Dr. W. Cramp, "Pneumatic Elevators in Theory and Practice"; Sir Kenneth Weldon Goadby, "Immunity and Industrial Disease"; W. Raitt, "Paper-pulp Supplies from India"; Sir George Curtis, "The Development of Bombay"; A. H. Ashbolt, "Industrial Development in Australia during and after the War"; and Sir Charles H. Bedford, "Industrial (including Power) Alcohol."

References to Current Literature

British

CERAMICS. The nomenclature of glasses. C. J. Peddle. *J. Soc. Glass Technol.*, May, 1921, pp. 3-11.

The reversible thermal expansion of fireclay and other refractory materials. H. S. Houldsworth and J. W. Cobb. *J. Soc. Glass Technol.*, May, 1921, pp. 16-38.

The re-annealing of glass. W. A. Whatmough. *J. Soc. Glass Technol.*, May, 1921, pp. 44-54.

The development of various types of glass. Part X. A comparison of the alkali-lime-silica and the alkali-lead oxide-silica glasses. C. J. Peddle. *J. Soc. Glass Technol.*, May, 1921, pp. 72-106.

The influence of aluminium on the properties of glass. V. Dimbleby, F. W. Hodkin and W. E. S. Turner. *J. Soc. Glass Technol.*, May, 1921, pp. 107-115.

CELLULOSE. The hydrolysis of cotton cellulose. G. W. Monier-Williams. *Chem. Soc. Trans.*, June, 1921, pp. 803-805.

REDUCTION. Reduction of emulsified nitro-compounds. Part I. β-Phenylhydroxylamine from nitrobenzene. A. Lapworth and L. K. Pearson. *Chem. Soc. Trans.*, June, 1921, pp. 765-768.

Reduction of emulsified nitro-compounds. Part II. Some extensions of the method. R. D. Haworth and A. Lapworth. *Chem. Soc. Trans.*, June, 1921, pp. 768-777.

SILICON COMPOUNDS. Organic derivatives of silicon. Part XXV. Saturated and unsaturated silicohydrocarbons, Si_4Ph_8. F. S. Kipping and J. E. Sands. *Chem. Soc. Trans.*, June, 1921, pp. 830-847.

Organic derivatives of silicon. Part XXVI. Piperidine as an analytical reagent. F. S. Kipping and J. E. Sands. *Chem. Soc. Trans.*, June, 1921, pp. 848-850.

BISMUTH COMPOUNDS. Organo-derivatives of bismuth. Part IV. The interaction of the halogen derivatives of tertiary aromatic bismuthines with organo-derivatives of magnesium and mercury. F. Challenger and C. F. Allpress. *Chem. Soc. Trans.*, June, 1921, pp. 913-926.

CAMPHOR DERIVATIVES. Studies in the camphane series. Part XXXIX. *p*-Aminophenylaminocamphor. M. O. Forster and W. B. Saville. *Chem. Soc. Trans.*, June, 1921, pp. 789-798.

KETONES. Piperitone. Part I. The occurrence, isolantio, and characterisation of piperitone. J. Read and H. G. Smith. *Chem. Soc. Trans.*, June, 1921, pp. 779-789.

The formation and stability of *spiro*-compounds. Part IV. Ketones derived from open-chain and cyclic glutaric acids. G. A. R. Kon. *Chem. Soc. Trans.*, June, 1921, pp. 810-830.

PHENOL PHTHALEIN. The use of aluminium chloride and ferric chloride in the preparation of phenol phthalein. C. F. Ward. *Chem. Soc. Trans.*, June, 1921, pp. 850-852.

SUBSTITUTION. The cumulative effect of the chlorine atom and the methyl and sulphonyl chloride groups on substitution in the benzene nucleus. Parts I. and II. W. Davies. *Chem. Soc. Trans.*, June, 1921, pp. 853-887.

ANTHRACENE. Studies in the anthracene series. Part I. E. de B. Barnett and J. W. Cook. *Chem. Soc. Trans.*, June, 1921, pp. 901-913.

French

CATALYSIS. The principal industrial applications of catalysis Part II. P. Razous. *L'Ind. Chim.*, June, 1921, pp. 213-216.

The catalytic decomposition of poly-halogenated aliphatic hydrocarbons. A. Mailhe. *Compt. rend.*, June, 20, 1921, pp. 1582-1584.

The catalytic decomposition of bromacetic acids and of mixtures of bromine and acetic acid. J. B. Senderens and J. Aboulenc. *Compt. end.*, June 20, 1921, pp. 1585-1587.

The rôle of gaseous impurities in the catalytic oxidation of ammonia. E. Decarrière. *Compt. rend.*, June 27, 1921, pp 1663-1666.

CYCLIC COMPOUNDS. Dicyclohexylamine and cyclohexylaniline. G. Fouque. *Ann. Chim.*, May-June, 1921, pp. 291-332.

ACIDS. Acrylic acid and its esters; halogenated propionic acids and their esters. C. Mouren, M. Murat and L. Tampier. *Ann. Chim.*, May-June, 1921, pp. 221-252.

The distillation of nitric acid and of mixtures of nitric and sulphuric acids. P. Pascal. *Ann. Chim.*, May-June, 1921, pp. 253-290.

Abietic acid. D. Johansson. *Monit. Scient.*, April, 1921, pp. 73-82.

ALIPHATIC COMPOUNDS. The higher members of saturated fatty compounds. A. Gascard. Hydrocarbons; alcohols; acids; esters; ethers; nitriles; constituents of waxes. *Ann. Chim.*, May-June, 1921, pp. 332-389.

ELECTRO-CHEMISTRY. The electrolysis of alkali chlorides. R. Moritz. *Chim. et Ind.*, June, 1921, pp. 636-641.

GELATINE. The properties of gelatine. L. Meunier. *Chim. et Ind.*, June, 1921, pp. 642-651.

TECHNOLOGY. The progress of metallisation; Schoop process by the pulverisation of liquid metals and alloys. P. Nicolardot. *Chim. et Ind.*, June, 1921, pp. 619-635.

INDICATORS. The use of coloured indicators in acidimetry and alkalimetry. V. Auger. Bibliography. *Bull. Soc. Chim.*, June 20, 1921, pp. 329-351.

German

COLOUR. The relation between the colour and the molecular structure of chemical compounds. J. Meisenheimer. *Z. phys. Chem.*, March 24, 1921, pp. 304-318.

THERMO-CHEMISTRY. The heats of combustion of benzoic acid, naphthalene, and cane sugar. F. Henning. *Z. phys. Chem.*, March 24, 1921, pp. 467-477.

CONSTITUTION. The use of the coefficient of molecular refraction for the determination of the constitution of organic compounds. F. Eisenlohr. *Z. angew. Chem.*, June 14, 1921, pp. 266-268.

SULPHITE. Sulphite liquor. R. Schwarz and H. Müller-Clemm. *Z. angew. Chem.*, June 17, 1921, pp. 272-275.

LIGNIN. Lignin and human substances. K. G. Jonas. *Z. angew. Chem.*, June 28, 1921, pp. 289-291.

SULPHUR. The conversion of hydrogen sulphide into sulphur by means of active charcoal; a new method of sulphur extraction and gas purification. A. Engelhard. *Z. angew. Chem.*, July 1, 1921, pp. 293-295.

ANALYSIS. The alkalimetrical examination of glass apparatus. F. Mylius. *Z. angew. Chem.*, June 24, 1921, pp. 281-284.

The estimation of zinc as ammonium zinc phosphate. G. Luff. *Chem.-Zeit.*, June 28, 1921, pp. 613-614.

The estimation of benzene in coke-oven gas. A. Thau. *Glückauf*; Part I., May 28, 1921, pp. 505-511; Part II., June 4, 1921, pp. 529-536; Part III., June 11, 1921, pp. 559-562.

OILS, FATS, WAXES. Recovery of oils and fats from operating water. J. Barth. *Z. Deut. Öl-u. Fett.-Ind.*, April 7, 1921, pp. 209-212.

Montan wax and a new method for the determination of the acid and saponification numbers of dark-coloured oils, fats and waxes. R. Pschorr, J. K. Pfaff and W. Berndt. *Z. angew. Chem.*, July 5, 1921, pp. 334-336.

FUEL. New method for the working-up of mineral oil and coal. F. Bergius. *Z. angew. Chem.*, July 5, 1921, pp. 341-347.

Conversion of coal into oils by reduction. Part I. The reduction of coal and other solid fuels by means of sodium formate. F. Fischer and H. Schrader. *Brennstoff-Chem.*, June 1, 1921, pp. 161-173.

Petrol from heavier hydrocarbons. R. von Walther. *Z. angew. Chem.*, July 5, 1921, pp. 329-332.

Miscellaneous

SUGARS. The configuration of certain sugars. J. Böeseken and H. Couvert. *Rec. Trav. Chim. des Pays-Bas*, April 15, 1921, pp. 354-380.

STERIC HINDRANCE. The Hofmann and Curtius transformations with reference to steric hindrance. H. L. Buning. *Rec. Trav. Chim. des Pays-Bas*, April 15, 1921, pp. 327-353.

TRANSPOSITIONS. Transpositions of unsaturated bodies in acid medium. Part II. A. Gillet. *Bull. Soc. Chim. Belg.*, June 1921, pp. 138-153.

Patent Literature

Abstracts of Complete Specifications

164,374-5-7. CELLULOSE DERIVATIVES. H. Dreyfus, 8, Waterloo Place, London, S.W.1. Application date, September 1, 1919.

164,374. Cellulose or near conversion products, not soluble in alkali, are treated with diethyl sulphate in the presence of alkali in such a way that the amount of water present is preferably only 1 to 1·5 times the natural humidity content of the cellulose, to produce cellulose ethyl ethers which are insoluble in water at any stage of etherification and are not precipitated from acoholic solutions by alcoholic solutions of alkalies. Detailed examples are given.

164,375. The process is similar to that of 164,374, except that the cellulose or the like is treated with benzyl chloride, benzyl bromide or other benzylating agents.

164,377. This process is also similar to that of 164,374, except that the cellulose or the like is treated partly with benzyl chloride and partly with ethyl or methyl derivatives either simultaneously or successively.

164,384-5-6. CELLULOSE DERIVATIVES, MANUFACTURE OF PRODUCTS HAVING A BASIS OF. H. Dreyfus, 8, Waterloo Place, London, S.W.1. Application date, December 3, 1919.

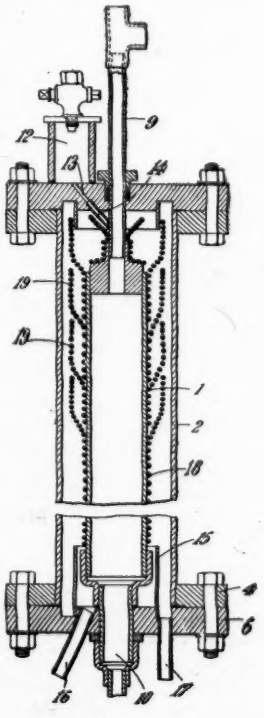
164,384. Films, varnishes and the like are made by treating aliphatic or mixed aliphatic esters or ethers, described in 164,374 (above), with one or more of the alkylated sulphonamide derivatives described in specifications Nos. 132,283, 133,353 and 154,334 (*see* THE CHEMICAL AGE, Vol. I., pages 503, 602, and Vol. IV., page 20) as high boiling solvents.

164,385. Cellulose derivatives of the benzylic class, or one or more of the mixed cellulose derivatives of the benzylic-aliphatic class, are treated with the alkylated sulphonamide derivatives mentioned above.

164,386. Ethyl or methyl cellulose or other cellulose ethers other than those mentioned in 164,384-5 above, are treated with the same alkylated sulphonamide derivatives.

164,407. DISTILLATION APPARATUS. G. W. Ellis, 8, Gloucester Road, South Kensington, London, S.W. Application date, January 8, 1920.

The apparatus comprises an inner tube 1 and an outer concentric tube 2 providing an annular distillation chamber. The liquid to be distilled passes through an inspection chamber 12 and passage 13, 14 to the external wall of the pipe 9, from which it flows over the external surface of the tube 1. This tube is wrapped with coils of wire 18 to increase the evaporating surface, and a heating medium is passed through the tube 1 from the inlet 9 to the outlet 10. The vapour generated condenses on the inner wall of the tube 2 and flows downward to the outlet 17, while the residual liquid flows downward to the outlet 16, the two outlets being separated by the annular flange 15. To prevent splashing of the incoming liquid on to the tube 2, the wire 18 is formed into a number of screens 19, which project outward and upward and conduct the liquid back to the tube 1.



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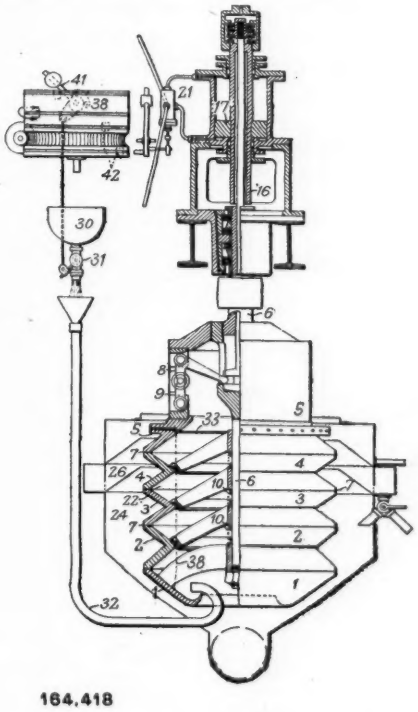
164,418. CENTRIFUGAL SEPARATORS AND THE LIKE. O. Imray, London. (From W. Mauss, 69, Cullinan Buildings, Main and Simmonds Streets, Johannesburg, South Africa.) Application date, Februa y 4, 1920.

The apparatus is for continuously treating liquids containing a small percentage of solid matter which is difficult to settle, such as dilute sugar solutions which contain 3 to 4 per cent. of solid matter. A number of sections—1, 2, 3, 4 and 5—are mounted on a shaft 6 so as to be rotated together, but capable of parting axially at the surfaces 7. The uppermost ection 5 is positively moved by toggle devices 8, 9, and the other sections are separated by p ings 10. The liquid is supplied from a reservoir 30 through a pipe 32 to the lowest section of the apparatus, travels upwards through the separating



164,418

chambers 22, and is discharged at the top through the outlet 33. The drum is rotated at a speed of 1,000 to 2,000 revolutions per minute. Solid matter is deposited in the chambers 22 from the bottom upwards in succession until the uppermost chamber commences to fill. The supply valve 31 is then closed and pressure fluid is admitted below the piston 15 to raise the rod 16 and operate the toggle levers 8, 9 to separate, the sections 1, 2, &c. The completely separated solid matter is thereby discharged into the vessel 24, and partially separated solid matter is discharged into the receiver 26. The separator may be actuated automatically. A slowly rotating drum 38 is provided with projections 39 which engage with the tumbler lever 41, which operates he valve 31, while other projections 42 operate the valve 21, which controls the supply of pressure fluid to the piston 17.

164,529. DISTILLING PETROLEUM OILS. F. A. Kormann, 71, Broadway, New York. Application date, March 17 1920.

The objec is to obtain a higher yield of oil having a low boiling point and a reduced proportion of fixed gases and carbon. The still is filled with highly absorbent bricks up to a point slightly below the oil level, and a steam heating coil is provided in the bottom of the still. Superheated steam is first passed through this coil to heat the apparatus to about 300°F., and oil is then admitted to saturate the bricks. The

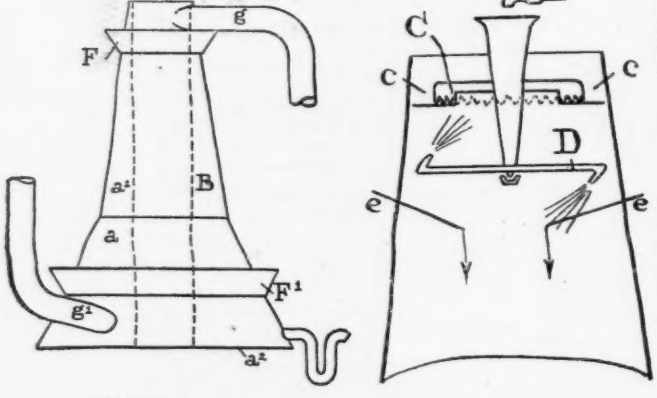
oil is hus subjected to compression in the capillary passages in he b icks, due to contraction of the latter, and distillation commences. Heating by superheated steam is then continued, and steam is also injected into the lower part of the still. The temperature is kep below that required to crack or dissociate the oil.

164,547. TREATMENT OF PULVERULENT OR GRANULAR MATERIALS WITH GASES, PARTICULARLY THE ROASTING OF ORES AND THE LIKE. R. Martin, Exete- Villa, Uplands, Swansea, and J. I. Richards, Upper Clay Works, Ystalyfera, near Swansea. Application date, March 23, 1920.

A number of furnace chambers are arranged one above the other and communicate with one another through openings in the floors at either end alternately. The material is conveyed over the floor by means of a transverse scraper carried by a frame and reciprocated over the floor. The frame also carries a plough device which turns over the material on the floor so as to expose fresh surfaces to the action of the gases, either device being brought into action automatically, according to the direction in which the combined device is moving over the floor. The portions of the apparatus which are subjected to high temperatures are constructed of heat-resisting alloys adapted to withstand temperatures of 1,000°C., such as "nichrome," "nykrom" or "cobaltcrom."

164,572. SULPHURIC ACID CHAMBERS, CONSTRUCTION OF. R. E. Dior, 18, Rue de Dome, Billancourt (Seine), France. Application date, April 14, 1920.

Each chamber is formed of two frusto-conical portions *a*, a^1, the sides of the lower being less inclined than those of the upper. A tube *B*, open at both ends, passes vertically through the chamber to damp the eddies set up by the walls of the chamber and by the condensation due to cooling. Sulphuric acid of about 53°Be. is distributed over the inner surface of the chamber from an annular groove *c* at the top, and this may be supplemented or replaced by a rotary reacting turbine *D*. The acid is distributed to the groove *c* by a serrated



164,572

cap *C*. Injectors *e* may be provided for spraying water or dilute sulphuric acid downwards into the chamber. The outer surface of the chamber is cooled by water, which is allowed to flow over it from an annular trough *F*. Inlet and outlet pipes g^1, *g* are arranged tangentially to the chamber at the bottom and top respectively. In a battery of four chambers the inlet of the first is connected to the Glover tower, and the others are connected in series and are of decreasing size to compensate for the decreased volume of gas. The outlet of the last chamber is connected to the Gay-Lussac tower. The dilute acid produced in each chamber is concentrated by supplying it to the preceding chamber.

164,581. THORIUM, RECOVERY OF. H. Wade, London. (From Lindsay Light Co., 161, East Grand Avenue, Chicago, Ill., U.S.A.) Application date, April 21, 1920.

Monazite sand is digested with concentrated sulphuric acid at 500°F. for about 11 hours. The thorium and associated rare earth metals titanium, zirconium, and iron are dissolved, and the sand is then washed with water and the solution brought to an acidity equivalent to 0·03 N by dilution. The solution is treated with a 30 per cent. hydrofluoric acid solution or a soluble fluoride which precipitates about 85 per cent. of the thorium. The remaining solution is further diluted with water and hydrofluoric acid again added to precipitate the remaining thorium. The precipitate is substantially free from phosphates, phosphoric acid, and other rare earth metals. Reference is directed in pursuance of Section 7, Sub-section 4, of the Patents and Designs Acts, 1907 and 1919, to Specification No. 127,555. (*See* THE CHEMICAL AGE, Vol. I, p. 554.)

164,625. LIME SLUDGE, PROCESS FOR THE UTILISATION OF WASTE OR SPENT. H. Levinson and G. Martin, The Co-operative Wholesale Society, Ltd., 109, Corporation Street, Manchester. Application date, June 18, 1920.

The object is to convert the spent lime sludge or calcium carbonate which is obtained in the alkali industry into a dry product which may be readily handled. The sludge is treated with the requisite quantity of quicklime to convert it into a dry mixture of calcium carbonate and calcium hydroxide, which may be used for agricultural purposes. If heat is applied to the sludge a smaller quantity of quicklime may be used.

164,627. SULPHURIC ACID, MANUFACTURE OF. Unione Italiana fra Consumatori e Fabbricani di Concimi e Prodotti Chemici and A. Sonnick, 7, Via San Nicolao, Milan, Italy. Application date, July 5, 1920.

The lead chambers used in the manufacture of sulphuric acid are made of great height in proportion to their cross section and are connected together only at their lower ends. A higher yield of acid per unit volume of chamber is obtained.

NOTE.—Abstracts of the following specifications, which are now accepted, appeared in THE CHEMICAL AGE when they became open to inspection under the International Convention :—136,574 (H. Dreyfus), relating to manufacture of acetic anhydride, *see* Vol. II., p. 210 ; 137,529 (E. Bielouss), relating to production of amino compounds from trinitrotoluol, *see*, Vol. II., p. 311 ; 149,316 (Titan Co. Aktieselskabet), relating to titanic oxide pigments, *see* Vol. III., p. 543 ; 154,870 (Minerals Separations, Ltd.), relating to ore concentration, *see* Vol. IV., p. 195 ; 158,533 (Fabriques de Produits Chimiques de Thann et de Mulhouse), relating to borneol, *see* Vol. IV., p. 483.

International Specifications not yet Accepted

163,042. ARTIFICIAL FUEL. F. F. Fournier, 25, Boulevard de Courcelles, Paris. International Convention date, May 10, 1920.

Lignite is powdered and then heated in a drying and carbonising stove by hot air to about 125°C. The lignite is then mixed with a small proportion of sulphuric acid or sodium chloride, with or without pitch, and kneaded and steam heated to form a homogeneous paste which may be moulded into blocks.

163,046. CATALYTIC AGENTS. Nitrogen Corporation, 55, Canal Street, Providence, R.I., U.S.A. (Assignees of J. C. Clancy, Niagara Falls, N.Y., U.S.A.). International Convention date, May 8, 1920.

A soluble cyanamide is treated with silver nitrate or cupric chloride to precipitate silver or copper cyanamide. Either or both of these substances may then be mixed with bismuth ferrocyanide, bismuth ferricyanide, calcium cerium ferrocyanide, cerium cobalt ferrocyanide, vanadium ferrocyanide or molybdenum ferrocyanide, and the mixture heated in air till puffing occurs. The resulting catalyst is suitable for use in the oxidation of ammonia, methyl alcohol or methane, or for the preferential combustion of carbon monoxide in presence of hydrogen by reaction with steam.

163,047. AMMONIA AND AMMONIUM SALTS. Nitrogen Corporation, 55, Canal Street, Providence, R.I., U.S.A. (Assignees of J. C. Clancy, Niagara Falls, N.Y., U.S.A.). International Convention date, May 8, 1920.

Gas oil is cracked in tubes of refractory material in the presence of air and steam, yielding a mixture of nitrogen, hydrogen, carbon dioxide, carbon monoxide and steam. The carbon monoxide is oxidised to dioxide by passing the gases over ferric oxide at a high temperature, and the process of oxidation is completed by preferential combustion in the presence of the catalysts described in 163,046 above. The carbon dioxide is absorbed by passing the gases through

aqueous ammonia, and the remaining gas consists of nitrogen of hydrogen, which, if the proportions of the starting materials were properly adjusted, are in the required proportions for the synthesis of ammonia. The synthesis is effected at high temperature and pressure in the presence of a metallic cyanamide or cyanide. Part of the ammonia may be used for absorbing the carbon dioxide in this process, and the ammonium carbonate may be treated with sulphur dioxide to convert it into sulphite, which is then oxidised by passing air through it in the presence of vanadium pentoxide as a catalyst.

163,271. OILS. L. Lilienfeld, 1, Zeltgasse, Vienna. International Convention date, May 10, 1920.

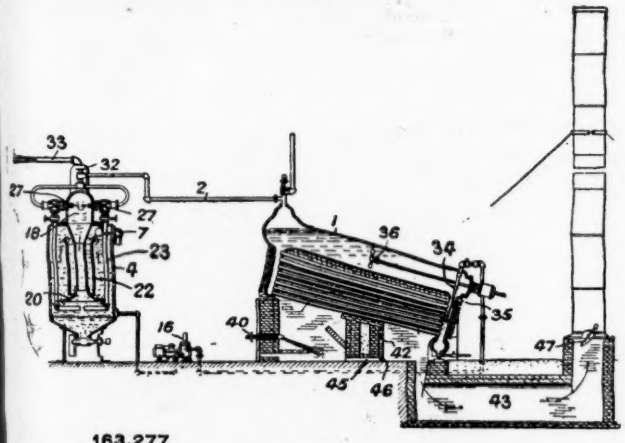
Solvent naphtha, crude benzol, and the like, are treated with sulphuric acid, washed till neutral, and fractions boiling below 180°C. are distilled off at ordinary pressure. The residue is distilled *in vacuo*, and the distillate between 150°C. and 300°C. is collected, treated with strong sulphuric acid to purify it, and re-distilled. The product consists mainly of saturated aromatic hydrocarbons, and is suitable as a lubricant, transformer oil, or softening agent.

163,272. PURIFYING FATS AND OILS. Soc. Rocca, Tassy, et de Roux, 46, Rue de Breteuil, Marseilles, France. International Convention date, May 3, 1920. Addition to 153,887. (*See* THE CHEMICAL AGE, Vol. IV., p. 133.)

To remove fatty acids from fats and fatty oils, the material is dissolved in carbon disulphide or other volatile hydrocarbon and treated with sodium carbonate or other anhydrous alkali or alkaline earth. The dry soap produced is filtered off.

163,277. CRACKING HYDROCARBONS. V. L. Emerson, 6381, Overbrook Avenue, Philadelphia, Pa., U.S.A. International Convention date May 6, 1920.

Oil is distilled in a still 1 and the vapour passes by a pipe 2 to two opposed jets 27, where it is subjected to violent impact. The vapour passes downwards through the chamber 18 into the oil in the still 4 to heat the oil and expel water vapour and sulphur compounds. Lighter vapour passes by the pipe



163,277

33 to a condenser, and heavy vapour is condensed in the still. Some oil may be drawn through the pipes 23 to the jets 27, and water or hydrogen may also be added. Hot oil passes by a pump 16 and pipe 34 to the still 1, and is discharged through nozzles 38 to cause circulation. The still is heated by an oil burner 40, which is directed towards a partition 42 having a passage 45 closed by bricks 46. If leakage of oil takes place, the oil removes the bricks 46 and fills the space 43, thus forming a liquid seal which cuts off the draught. The temperature is maintained at 700°F. to 800°F., and the pressure at 75 lb. to 100 lb. per sq. in.

163,304. ALKALINE EARTH CHLORIDES. Minami Manshu Tetsudo Kabushiki Kaisha, Higashi-Koenmachi, Tairen, Kwanto Shu, Manchuria, China. (Assignees of I. Namari, 31, Ichino-machi-Nigashigocho, Sakai, Osaka Fu, Japan.) International Convention date, May 15, 1920.

A mixture of sodium and potassium chlorides, or other haloid salts of metals electropositive to the alkaline earth metals, is fused and mixed with ammonium chloride and the oxide, hydrate, carbonate, or oxychloride of the alkaline earth metal. Ammonia or ammonium carbonate is evolved and collected, and the alkaline earth chloride is obtained in anhydrous condition suitable for electrolysis. The ammonia may be combined with hydrochloric acid to obtain ammonium chloride for use in the process. The hydrochloric acid may be obtained by heating carbon to 300°C., and treating it with chlorine and steam.

163,323. HYDROGEN. Nitrogen Corporation, 55, Canal Street, Providence, R.I., U.S.A. (Assignees of J. C. Clancy, Niagara Falls, N.Y., U.S.A.) International Convention date, May 14, 1920.

A mixture of sulphur vapour and an excess of steam is passed through a quartz or other refractory tube furnace which is heated electrically to 800°C. Hydrogen and sulphur dioxide are obtained and the latter is absorbed in alkalies or alkaline earths to produce sulphates. Alternatively the sulphur dioxide may be obtained by liquefaction or by absorption in silica gel, water, sodium carbonate, or ammonia. The latter may be obtained from the hydrogen and atmospheric nitrogen.

163,330. CALCIUM NITRATE. Aluminium-Industrie-Akt.-Ges., Neuhausen, Switzerland. International Convention date, May 19, 1920.

Nitric acid is concentrated to about 48°Bé, and is supplied continuously, together with ground limestone, to an apparatus the temperature of which is kept down to 60°C. to 80°C. The calcium nitrate is continuously discharged in a pasty condition by a conveyor.

LATEST SPECIFICATIONS

165,759. Process for the manufacture of phosphoric acid. Hirschel, W. H., and Amsterdamsche Superfosfaatfabriek. June 24, 1920.

165,761. Process for desulphurising gases. Farbwerke Vorm. Meister, Lucius and Brüning. July 2, 1920.

165,766. Process for regulating the working of the waste gases in blast furnace operations. Diepochlag, E. June 30, 1920.

165,767. Manufacture of zinc oxide. New Jersey Zinc Co. June 28, 1920.

165,770. Process for the manufacture of perylene. Zinke, A. July 2, 1920.

165,771. Process for the manufacture of dioxyperylene. Zinke, A. July 2, 1920.

165,778. Apparatus for vaporising hydrocarbons. Empis, H. C. June 29, 1920.

165,779. Process for the manufacture of easily and neutrally soluble double compounds of 1-allyl-3·7-dimethylxanthine. Hoffmann-La Roche & Co. Akt.-Ges., F. July 2, 1920.

165,784. Process of treating wood and apparatus therefor. Ammon, H. F. July 1, 1920.

165,721. Manufacture of new halogen derivatives of basic acridine dyestuffs. Durand & Huguenin Akt.-Ges. June 30, 1920.

165,722. Furnace for dry distillation of waste liquors and similar masses. Cellulose Aktiebolaget. June 29, 1920.

165,724. Retorts for distillation. Deutsche Petroleum Akt.Ges., Kacser, S., and Bauer, E. July 3. 1920.

165,728. Process for the production of crotonic acid from croton aldehyde. Elektrizitatswerk Lonza Akt.-Ges. July 2, 1920.

165,788. Process for the manufacture of decolourising charcoal of high activity. Adler, R. July 5, 1920.

165,733-4-5-6. July 11, 1920; 165,737-8-9-40. September 8, 1919. Coke Ovens or the like. American Coke & Chemical Co.

165,743. Method of manufacture of raw alkali-cellulose for working into viscose. Schwarzkopf, R. June 30, 1920.

165,747. Manufacture of anhydrides. Wacker Ges. Für Elektrochemische Industrie Ges., Dr. A. June 30, 1920.

165,794. Pyrogenation process. Hennebutte, H. G. July 2, 1920.

165,795. Pyrogenation process. Hennebutte, H. G., and Gontal, E. July 2.

Specifications Accepted, with Date of Application

138,113. Aldehyde fatty acids and aldehydes from mineral oils and their distillates, Process of making. C. P. Byrnes. January 22, 1919.

140,060. Ammonia, Process for the synthetic production of. L. Duparc and C. Urfer. March 13, 1919.

148,885. Nitrogen or nitrogen and hydrogen mixtures, Process for preparing. L. Casale. July 12, 1919.

151,583. Cyanamide from calcium cyanamide, Method of producing. Wargons Aktiebolag and J. H. Liedholm. September 19, 1919.

158,852. Tar, Distillation of. Barrett Co. February 7, 1920.

165,144. Carbonaceous matter, Flotation treatment of. F. B. Jones, E. Bury and Minerals Separation Ltd. February 18, 1920.

Monthly Market Report and Current Prices

Our Market Report and Current Prices are exclusive to THE CHEMICAL AGE, *and, being independently prepared with absolute impartiality by Messrs. R. W. Greeff & Co., Ltd., and Messrs. Chas. Page & Co., Ltd., may be accepted as authoritative. The prices given apply to fair quantities delivered ex wharf or works, except where otherwise stated. The weekly report contains only commodities whose values are at the time of particular interest or of a fluctuating nature. A more complete report and list are published once a month. The current prices are given mainly as a guide to works managers, chemists, and chemical engineers; those interested in close variations in prices should study the market report.*

British Market Report

THURSDAY, July 14.

Whilst the better tendency which we indicated last week is maintained, it is taking industry some time to recover from the recent industrial troubles apart from the restriction of business due to the prevailing trade depression. The undertone in many articles is, however, better—there is considerably more enquiry and the volume of business is slowly increasing.

Export enquiry in certain directions is fairly active, and in this branch of trade also things seem to be on the mend.

General Chemicals

ACETONE is in active enquiry—spot supplies are scarce.

ACID ACETIC is a better market, and a steady volume of small business is reported.

ACID CITRIC is slightly lower in price, but stocks are not large.

ACID FORMIC seems to have found its level, but little business is yet reported.

ACID TARTARIC remains slow of sale—price unchanged.

BARIUM CHLORIDE.—Buying is of the hand to mouth variety, and several cheap realisation offers are reported.

BLEACHING POWDER is only a small market and prices are easy on account of Continental offering.

COPPER SULPHATE remains unchanged.

FORMALDEHYDE is a very slow market, but the undertone is firm.

LEAD ACETATE.—There is no demand.

LEAD NITRITE is quiet and slow of sale.

POTASH CARBONATE.—There is little doing.

POTASH BICHROMATE.—Cheap offers of foreign make are reported, but parcels are hard to place.

POTASH CAUSTIC.—A much better business is indicated, but the slackness of demand remains quite abnormal.

POTASH PERMANGANATE is rather easier in price, and only small transactions can be discerned.

POTASH PRUSSIATE maintains its firmer tendency, and there is little visible stock.

SODA ACETATE remains featureless.

SODA BICHROMATE has experienced rather a better market, and the price is inclined to be firmer.

SODA CAUSTIC remains lifeless.

SODA HYPOSULPHITE.—There has been more demand and several satisfactory transactions are reported.

SODA PHOSPHATE remains unchanged.

SODA PRUSSIATE is rather easier on account of realisations, but any improvement in demand may be expected to quickly influence the market.

SODA SULPHIDE.—There has again been a certain volume of export business, but overseas limits are too low.

Coal Tar Products

There is little enquiry for most coal tar products, although prompt supplies of creosote are difficult to obtain.

90's BENZOL is nominally quoted at 3s. per gallon, on rails.

PURE BENZOL is worth about 3s. 3d. per gallon.

CREOSOTE OIL is somewhat scarce for prompt, and is quoted at 8d. in the North, and 9d. in the South.

CRESYLIC ACID is quoted at 2s. 4d. on rails for the pale quality, 97/99 per cent., and Dark, 95/97 per cent., is worth about 2s. to 2s. 2d.

SOLVENT NAPHTHA is quoted at 2s. 6d. on rails.

HEAVY NAPHTHA is worth 2s. 5d.

NAPHTHALENE shows no change. Crude qualities are worth from £8 to £11, while refined are from £17 to £23 per ton.

Coal Tar Intermediates

A slight improvement has been experienced, but business still leaves a good deal to be desired. It is expected that before very long the demand will be more brisk.

ALPHA NAPHTHYLAMINE continues quiet but the price is maintained.

ANILINE OIL and SALT are inclined to be easy in the absence of any brisk demand.

BENZIDINE is in small inquiry.

BETA NAPHTHOL.—Business is quietly steady at last quoted figures.

DIMETHYLANILINE is in better demand and price is inclined to be firmer.

DIPHENYLAMINE is quieter, without change in value.

H. ACID is quiet and steady with little business passing.

NITRO BENZOL is in fair request and price is maintained.

PARANITRANILINE is in small request, but with the absorption of several second-hand parcels the price is inclined to harden.

PHTHALIC ANHYDRIDE is idle and in buyer's favour.

SALICYLIC ACID is firm, but with only moderate business passing.

PITCH.—The Market is quiet and prices are unchanged.

Sulphate of Ammonia

SULPHATE OF AMMONIA.—There are no new features to report.

French Market Report

Trade continues very slack, and quotations are in many cases quite nominal. The following are the chief quotations :—

ACETONE, 500 frs.
ACID ACETIC, 80 per cent., 350 frs.
ACID BORIC, 370 frs.
ACID LACTIC, 50 per cent., 250 frs.
ACID OXALIC, 430 frs.
ACID TARTARIC, 9 frs. per kilo.
ALUM LUMP, 90 frs.
ALUM CHROME, 210 frs.
AMMONIUM PHOSPHATE, 400 frs.
BARIUM CHLORIDE, 9 frs. per kilo.
BLEACHING POWDER, 55 frs.
CALCIUM CHLORIDE, 45 frs.
COPPER SULPHATE, 160 frs.
FORMALDEHYDE, 40 per cen ., 575 frs.
HYDROGEN PEROXIDE, 125 frs.
LITHOPONE, 155 frs.
LITHARGE, 155 frs.
POTASSIUM BICHROMATE, 430 frs.
POTASSIUM META BISULPHITE, 600 frs.
POTASSIUM PRUSSIATE. 600 frs.
SODIUM ARSENIATE, 235 frs.
SODIUM BICARBONATE, 100 frs.
SODIUM BICHROMATE, 280 frs.
SODIUM CAUSTIC, 76 per cent., 100 frs.
SODIUM CYANIDE, 550 frs.
SODIUM HYPOSULPHITE, 90 frs.
SODIUM PHOSPHATE, 155 frs.
SODIUM PRUSSIATE, 400 frs.
SODIUM SULPHIDE, CONCENTRATED, 100 frs.
SODIUM SULPHITE, 150 frs.

All the above prices are per 100 kilos, unless otherwise stated.

German Market Report

Business continues very slack, although here and there there are signs of a slightly better tone. With any increase in business it is expected that several sharp advances will occur.

ACID BENZOIC, 35 marks.
ACID OXALIC, 14 marks.

ACID TARTARIC, 35 marks.
ALUM LUMP, 2 marks.
ALUM CHROME, 5 marks.
AMMONIA CARBONATE, 4.3 marks.
BORAX POWDER, 18.25 marks.
COPPER SULPHATE, 4.75 marks.
FORMALDEHYDE, 14 marks.
LITHOPONE, 5 marks.
LEAD ACETATE, 10.50 marks.
POTASSIUM BICHROMATE, 14 marks.
POTASSIUM CHLORATE, 6.25 marks.
POTASSIUM IODIDE, 390 marks.
POTASSIUM CYANIDE, 33 marks.
SODIUM CAUSTIC, 4.90 marks.
SODIUM BROMIDE, 19 marks.
SODIUM CYANIDE, 25 marks.
All above prices are per kilo.

Current Prices

Chemicals

	per	£	s.	d.		£	s.	d.
Acetic anhydride	lb.	0	2	3	to	0	2	6
Acetone oil	ton	95	0	0	to	100	0	0
Acetone, pure	ton	105	0	0	to	110	0	0
Acid, Acetic, glacial, 99-100%	ton	65	0	0	to	67	10	0
Acetic, 80% pure	ton	50	0	0	to	52	0	0
Arsenic	ton	100	0	0	to	105	0	0
Boric, cryst	ton	69	0	0	to	70	0	0
Carbolic, cryst. 39-40%	lb.	0	0	6½	to	0	0	7
Citric	lb.	0	2	7	to	0	2	9
Formic, 80%	ton	65	0	0	to	70	0	0
Gallic, pure	lb.	0	4	0	to	0	4	3
Hydrofluoric	lb.	0	0	8½	to	0	0	9
Lactic, 50 vol	ton	35	0	0	to	37	10	0
Lactic, 60 vol.	ton	40	0	0	to	42	10	0
Nitric, 80 Tw	ton	41	0	0	to	44	0	0
Oxalic	lb.	0	0	9½	to	0	0	10
Phosphoric, 1.5	ton	55	0	0	to	57	0	0
Pyrogallic, cryst	lb.	0	7	9	to	0	8	0
Salicylic, Technical	lb.	0	1	0	to	0	1	2
Salicylic, B.P.	lb.	0	1	5	to	0	1	6
Sulphuric, 92-93%	ton	8	10	0	to	8	15	0
Tannic, commercial	lb.	0	3	6	to	0	3	9
Tartaric	lb.	0	1	8	to	0	1	9
Alum, lump	ton	18	0	0	to	18	10	0
Alum, chrome	ton	37	10	0	to	40	0	0
Alumino ferric	ton	9	0	0	to	9	10	0
Aluminium, sulphate, 14-15%	ton	12	0	0	to	13	0	0
Aluminium, sulphate, 17-18%	ton	15	0	0	to	16	0	0
Ammonia, anhydrous	lb.	0	2	2	to	0	2	4
Ammonia, .880	ton	43	0	0	to	45	0	0
Ammonia, .920	ton	30	0	0	to	32	10	0
Ammonia, carbonate	lb.	0	0	4	to		—	
Ammonia, chloride	ton	65	0	0	to	70	0	0
Ammonia, muriate (galvanisers)	ton	50	0	0	to	52	0	0
Ammonia, nitrate	ton	55	0	0	to	60	0	0
Ammonia, phosphate	ton	95	0	0	to	100	0	0
Ammonia, sulphocyanide	lb.	0	3	0	to	0	3	0
Amyl acetate	ton	420	0	0	to	425	0	3
Arsenic, white, powdered	ton	50	0	0	to	52	0	0
Barium, carbonate, 92-94%	ton	12	10	0	to	13	0	0
Barium, chlorate	lb.	0	0	11	to	0	1	0
Chloride	ton	18	0	0	to	19	0	0
Nitrate	ton	50	0	0	to	52	0	0
Barium Sulphate, blanc fixe, dry	ton	30	0	0	to	31	0	0
Sulphate, blanc fixe, pulp	ton	16	10	0	to	17	0	0
Sulphocyanide, 95%	lb.	0	1	6	to	0	1	0
Bleaching powder, 35-37%	ton	18	0	0	to	19	0	0
Borax crystals	ton	34	0	0	to	36	0	0
Calcium acetate, Brown	ton	12	0	0	to	13	0	0
,, Grey	ton	19	0	0	to	21	0	0
Calcium Carbide	ton	29	0	0	to	30	0	0
Chloride	ton	12	10	0	to	13	0	0
Carbon bisulphide	ton	65	0	0	to	67	0	0
Casein, technical	ton	90	0	0	to	92	0	0
Cerium oxalate	lb.	0	3	9	to	0	4	0
Chromium acetate	lb.	0	1	2	to	0	1	4
Cobalt acetate	lb.	0	11	6	to	0	12	6
Oxide, black	lb.	0	16	0	to		—	
Copper chloride	lb.	0	1	3	to	0	1	6
Sulphate	ton	35	0	0	to	37	0	0
Cream Tartar, 98-100%	ton	130	0	0	to	135	0	0
Epsom salts (*see* Magnesium sulphate)								
Formaldehyde 40% vol	ton	95	0	0	to	97	10	0
Formusol (Rongalite)	lb.	0	3	9	to	0	4	0
Glauber salts, commercial	ton	6	0	0	to	7	0	0
Glycerine, crude	ton	70	0	0	to	72	10	0
Hydrogen peroxide, 12 vols.	gal.	0	2	8	to	0	2	9
Iron perchloride	ton	45	0	0	to	50	0	0
Iron sulphate (Copperas)	ton	4	0	0	to	4	5	0
Lead acetate, white	ton	50	0	0	to	52	0	0
Carbonate (White Lead)	ton	43	0	0	to	46	0	0
Nitrate	ton	55	0	0	to	57	0	0
Litharge	ton	38	10	0	to	40	0	0
Lithopone, 30%	ton	28	0	0	to	30	0	0
Magnesium chloride	ton	18	0	0	to	19	0	0
Carbonate, light	cwt.	2	15	0	to	3	0	0
Sulphate (Epsom salts commercial)	ton	10	10	0	to	11	10	0
Sulphate (Druggists')	ton	18	10	0	to	19	10	0
Manganese, Borate	ton	70	0	0	to	75	0	0
Sulphate	ton	70	0	0	to	75	0	0
Methyl acetone	ton	95	0	0	to	100	0	0
Alcohol, 1% acetone	ton	145	0	0	to	150	0	0
Nickel sulphate, single salt	ton	60	0	0	to	62	0	0
Nickel ammonium sulphate, double salt	ton	62	0	0	to	64	0	0
Potash, Caustic	ton	34	0	0	to	35	0	0
Potassium bichromate	lb.	0	0	9½	to		—	
Carbonate, 90%	ton	40	0	0	to	42	10	0
Chloride	ton	38	0	0	to	40	0	0
Chlorate	lb.	0	0	8½	to	0	0	9
Meta bisulphite, 50-52%	ton	120	0	0	to	125	0	0
Nitrate, refined	ton	50	0	0	to	52	0	0
Permanganate	lb.	0	1	6	to	0	1	8
Prussiate, red	lb.	0	2	0	to	0	2	1
Prussiate, yellow	lb.	0	1	3	to	0	1	4
Sulphate, 90%	ton	31	0	0	to	33	0	0
Salammoniac, firsts	cwt	3	5	0	to		—	
Seconds	cwt	3	0	0	to		—	
Sodium acetate	ton	30	0	0	to	32	0	0
Arsenate, 45%	ton	60	0	0	to	62	0	0
Bicarbonate	ton	10	10	0	to	11	0	0
Bichromate	lb.	0	0	7	to	0	0	7½
Bisulphite, 60-62%	ton	35	0	0	to	37	10	0
Chlorate	lb.	0	0	5½	to	0	0	5½
Caustic, 70%	ton	24	0	0	to	24	10	0
Caustic, 76%	ton	25	0	0	to	25	10	0
Hydrosulphite, powder, 85%	lb.	0	2	3	to	0	2	6
Hyposulphite, commercial	ton	15	0	0	to	16	0	0
Nitrite, 96-98%	ton	45	0	0	to	46	0	0
Phosphate, crystal	ton	25	0	0	to	27	0	0
Perborate	lb.	0	1	9	to	0	2	0
Prussiate	lb.	0	0	7	to	0	0	7½
Sodium Sulphide, crystals	ton	19	0	0	to	20	0	0
Sulphide, solid, 60-62%	ton	26	0	0	to	30	0	0
Sulphite, cryst	ton	15	0	0	to	16	0	0
Strontium carbonate	ton	85	0	0	to	90	0	0
Strontium Nitrate	ton	84	0	0	to	90	0	0
Strontium Sulphate, white	ton	8	10	0	to	10	0	0
Sulphur chloride	ton	42	0	0	to	44	10	0
Sulphur, Flowers	ton	19	0	0	to	19	10	0
Roll	ton	19	0	0	to	19	10	0
Tartar emetic	lb.	0	1	10	to	0	2	0
Tin perchloride, 33%	lb.	0	2	6	to	0	2	7
Tin Perchloride, solid	lb.	0	3	0	to	0	3	3
Protochloride (tin crystals)	lb.	0	1	8	to	0	1	9
Zinc chloride, 102 Tw.	ton	22	0	0	to	23	10	0
Chloride, solid, 96-98%	ton	60	0	0	to	65	0	0
Oxide, 99%	ton	45	0	0	to	47	10	0
Dust, 90%	ton	90	0	0	to	92	10	0
Sulphate	ton	21	10	0	to	23	10	0

Coal Tar Intermediates, &c.

Alphanaphthol, crude	lb.	0	4	0	to	0	4	3
Alphanaphthol, refined	lb.	0	4	6	to	0	4	9
Alphanaphthylamine	lb.	0	3	0	to	0	3	3
Aniline oil, drums extra	lb.	0	1	7	to	0	1	8
Aniline salts	lb.	0	1	8	to	0	1	10
Anthracene, 85-90%	lb.		—		to		—	
Benzaldehyde (free of chlorine)	lb.	0	4	9	to	0	5	0
Benzidine, base	lb.	0	8	6	to	0	9	0
Benzidine, sulphate	lb.	0	9	0	to	0	9	6
Benzoic acid	lb.	0	2	3	to	0	2	6
Benzoate of soda	lb.	0	2	3	to	0	2	6
Benzyl chloride, technical	lb.	0	2	0	to	0	2	3
Betanaphthol benzoate	lb.	0	8	0	to	0	8	6
Betanaphthol	lb.	0	2	9	to	0	3	0
Betanaphthylamine, technical	lb.	0	9	6	to	0	10	0
Croceine Acid, 100% basis	lb	0	5	0	to	0	6	3
Dichlorbenzol	lb.	0	0	9	to	0	0	10
Diethylaniline	lb.	0	6	9	to	0	7	6
Dinitrobenzol	lb.	0	1	5	to	0	1	6
Dinitrochlorbenzol	lb.	0	1	5	to	0	1	6
Dinitronaphthaline	lb.	0	1	6	to	0	1	8
Dinitrotoluol	lb.	0	1	8	to	0	1	9
Dinitrophenol	lb.	0	3	0	to	0	3	3

	per	£	s.	d.		£	s.	d.
Dimethylaniline	lb.	0	4	0	to	0	4	3
Diphenylamine	lb.	0	4	6	to	0	4	9
H-Acid	lb.	0	10	0	to	0	10	6
Metaphenylenediamine	lb.	0	5	9	to	0	6	0
Monochlorbenzol	lb.	0	0	10	to	0	1	0
Metanilic Acid	lb.	0	7	6	to	0	8	0
Monosulphonic Acid (2:7)	lb.	0	7	6	to	0	8	0
Naphthionic acid, crude	lb.	0	4	0	to	0	4	3
Naphthionate of Soda	lb.	0	4	3	to	0	4	6
Naphthylamin-di-sulphonic-acid	lb.	0	5	0	to	0	5	6
Nitronaphthalene	lb.	0	1	5	to	0	1	6
Nitrotoluol	lb.	0	1	4	to	0	1	5
Orthoamidophenol, base	lb.	0	18	0	to	1	0	0
Orthodichlorbenzol	lb.	0	1	1	to	0	1	2
Orthotoluidine	lb.	0	2	3	to	0	2	6
Orthonitrotoluol	lb.	0	0	10	to	0	1	0
Para-amidophenol, base	lb.	0	12	6	to	0	13	0
Para-amidophenol, hydrochlor	lb	0	13	0	to	0	13	6
Paradichlorbenzol	lb.	0	0	7	to	0	0	8
Paranitraniline	lb.	0	4	3	to	0	4	6
Paranitrophenol	lb.	0	2	9	to	0	3	0
Paranitrotoluol	lb.	0	5	9	to	0	6	0
Paraphenylenediamine, distilled	lb.	0	13	6	to	0	14	6
Paratoluidine	lb.	0	7	6	to	0	8	0
Phthalic anhydride	lb.	0	3	9	to	0	4	0
Resorcin, technical	lb.	0	7	6	to	0	8	0
Resorcin, pure	lb.	0	8	6	to	0	9	0
Salol	lb.	0	2	9	to	0	3	0
Sulphanilic acid, crude	lb.	0	1	4	to	0	1	6
Tolidine, base	lb.	0	8	6	to	0	10	0
Tolidine, mixture	lb.	0	2	9	to	0	3	0

Metals and Ferro Alloys

The following prices are furnished by Messrs. Miles, Mole & Co., Ltd., 101, Leadenhall Street, London, E.C.

	per	£	s.	d.		£	s.	d.
Aluminium, 98-99%	ton	150	0	0	to	150	0	0
Antimony, English	ton	37	0	0	to	40	0	0
Copper, Best Selected	ton	72	0	0	to	73	0	0
Ferro-Chrome, 4-6%	ton	36	0	0	to	37	0	0
Ferro-Chrome Manganese, loose	ton	18	0	0	to	20	0	0
Silicon, 45-50%	ton	16	0	0	to	17	0	0
Tungsten, 75-80%	lb.	0	1	9	to	0	1	10
Lead Ingot	ton	24	0	0	to	25	0	0
Lead Sheets	ton	33	0	0	to	34	0	0
Nickel, 98-99%	ton	190	0	0	to	191	0	0
Tin	ton	167	0	0	to	168	0	0
Spelter	ton	26	10	0	to	27	0	0

Structural Steel

	Per	£	s.	d.		£	s.	d.
Angles and Tees	ton	14	0	0	to	15	0	0
Flats and Rounds	ton	15	0	0	to	16	0	0
Joists	ton	14	0	0	to	15	0	0
Plates	ton	15	0	0	to	16	0	0
Rails, heavy	ton	15	0	0	to	16	0	0
Sheets, 24 Gauge	ton	19	0	0	to	20	0	0
Galvanized Corrd. Sheets	ton	22	0	0	to	23	0	0
Zinc Sheets	ton	34	0	0	to	35	0	0

Lord Leverhulme on Business

ADDRESSING students at the Regent Street Polytechnic on Monday, Lord Leverhulme urged them to treat business as a game if they wished to make a success of it. It had been truly said of the Germans that they were the professionals of business. We English were the amateurs, but, after all, a good amateur got the best out of the game. Business was the most enthralling game of all, and there was nothing else that called forth such strenuous work or brought out our abilities so strongly. Some people said business was merely a question of service, and so it was, but to render service was no merit; it was one of the fundamentals of life. There could, however, be no game, not even the game of business, without some goal to aim for, and most men's careers were founded upon some ideal that came to them while they were young. Even the Pyramids were probably born in the mind of some young man who first thought about them and then devoted himself to their realisation. Success meant opportunity, and the only opportunity a young man had in life was the opportunity to work. If they did not achieve success they should not lay the blame on the wrong thing. Happiness did not depend upon holding a high position, and the man who usefully served his day and generation in public service could be just as proud of the fact as a man higher up in the social scale.

Chemical Reaction in Casein Glue

INVESTIGATIONS are being conducted by the Canadian Forest Products Laboratory into the causes of the decomposition of casein glues when exposed to damp. Although these are not yet complete, it has been found that the decomposition of ordinary alkaline casein glues is not due to the action of bacteria or moulds. It appears to be due entirely to the chemical action of the alkali in the glue. This conclusion is based upon the following observations:

Increasing the amount of alkali in the glue increases the rate of decomposition when the glue is kept wet. Glues containing no sodium hydroxide, although deficient in some important respects, do not decompose as rapidly as similar glues containing sodium hydroxide. Cultures of moulds and bacteria could not be obtained from decomposed alkaline glues. Some chemicals which have antiseptic properties are found to improve casein glue, but this improvement is due to their chemical action rather than to their toxic properties. Glues can be completely decomposed in a short time at temperatures above that at which bacteria can grow. Further work is being directed toward the production of glues which will resist chemical decomposition and at the same time be impervious to the action of fungi and bacteria as well as moisture.

Crystallisation of Dextrose

THE U.S. Bureau of Standards has found that pure dextrose or glucose can be crystallised from its water solution and separated from the impurities by centrifugal machines in much the same manner as cane sugar. In controlling this crystallisation a knowledge of the solubilities of the pure substance in water is of fundamental importance. These solubilities have been determined at temperatures extending from 0°C. to 90°C. At all temperatures below 50°C. the substance crystallises with one molecule of water of crystallisation, *i.e.*, 9 per cent. water combined with the crystals, while above 50°C. the substance is anhydrous. Dextrose is much less soluble than cane sugar, and thus lends itself readily to this new process of crystallisation. The solubilities are: at 23°C., 49·37 per cent.; at 30°C., 54·68 per cent.; at 50°C., 71·06 per cent.; at 55°C., 73·08 per cent.; at 80°C., 81·46 per cent., and at 90°C., 85·0 per cent.

Patents Court Cases

APPLICATION has been made for the following patents to be indorsed "Licences of Right" under Sect. 24 of the Patents and Designs Acts, 1907 and 1919: 137,071, relating to the production of concentrated nitrous gases and nitric acid; 139,462, relating to nitrogenous fertilisers. Both are in the name of Norsk Hydro-Elektrisk Kvaelstofaktieselskab. Any notice of opposition must be given by August 15, 1921.

Recent Wills

Mr. H. Dunn, of 63, Kirkgate, Shipley, chemist and druggist £3,014

Mr. R. Macalister, of 360, Cathedral Street, and who resided at Robaniter, Blairbeth Road, Burnside, manufacturing chemist £2,525

Mr. R. JUDD, of 97, Grange Road, Small Heath, wholesale druggist £1,541

Mr. J. J. Whalley, of Lawn Bank, Duke's Brow, Blackburn, Lancashire, china-clay merchant. £18,939

Mr. R. Porter, of Riversdale, Elland, Yorks, gas engineer £22,445

Lieutenant-Colonal Sir Gerald Smith, K.C.M.G., late Scots Fusilier Guards, of Cromwell Road, London, S.W., formerly of Baldock, Herts, a director of the Australian Maikop Oil Co..... £8,804

Mr. W. B. King, of The Elms, Werstead Road, Ipswich, tar distiller £20,193

Mr. S. Hardy, of Hamilton Road, Sefton Park, Liverpool, chemist and druggist £1,797

Mr. J. Smith, of Morecambe, retired wholesale chemist and druggist £1,375

Mr. C. G. Ballingall, of Eldon Road, Hampstead Road, Hampstead, N.W., and of Leadenhall Street, E.C., a director of Java Rubber Plantations, Ltd. £27,652

Company News

BURMAH OIL CO.—Letters of allotment of the issue of Burmah Oil 8 per cent. preference shares have been posted.

NOBEL INDUSTRIES.—The transfer books of the preference shares are closed from to-day (Saturday) to July 30, inclusive.

BRIMSDOWN LEAD CO.—The share registers and transfer books are closed from July 12 to 30.

ARIZONA COPPER CO., LTD.—At a special meeting of the board of the Arizona Copper Co., Ltd., held on Tuesday, the directors considered a proposal to sell the undertaking for shares in an American corporation. In view of the present condition of the copper industry, the directors, in a statement issued on Tuesday night, state they consider it desirable to proceed with negotiations. A further communication will be issued to shareholders as soon as practicable.

NEUCHATEL ASPHALTE CO.—The profit of the Neuchatel Asphalte Co., Ltd., for the year ended December 31 last, after providing for depreciation and for reserves for maintenance of streets, amounted to £32,342, to which has to be added £4,643 brought forward. The directors recommend a dividend of 6d. per share, less tax, for the year 1920, payable on July 22, leaving £11,060 to be carried forward. In accordance with the policy already indicated of adjusting the company's organisation to post-war conditions, steps are being taken to constitute certain of the company's branches as subsidiary companies. In the case of Brazil such a subsidiary company has been formed under the name of Companhia Auxiliar de Viação e Obras, which was incorporated in February, 1921, under the laws of that Republic.

CAPE ASBESTOS CO.—For the year 1920 the accounts show a profit, after making provision for corporation profits tax, income-tax, and bad and doubtful debts, and including income from Capamianto, S.A.I., Turin, of £25,379; brought in, £9,393; total, £34,771. Less dividend of 5 per cent. paid on preference shares, less tax, £2,300; addition to reserve (including £8,525 realised from sale of company's holding in Cie Française de l'Amiante du Cap, and increasing the reserve to £53,525), £13,525, leaving £19,146. The directors now recommend a further dividend of 6¼ per cent. on ordinary shares, making 10 per cent. for year, less tax, and a dividend to preference shareholders of an amount equivalent to the dividend, less tax, on the ordinary; forward, £9,136. The annual meeting was held yesterday at 23, King Street, Cheapside, E.C.

AGUAS BLANCAS NITRATE CO.—The accounts for 1920 show a gross profit of £68,214, while £700 was received as income from investments and transfer fees. There has to be deducted administration expenses £2,898, provision for income tax £5,000, and £2,865 for interest and discount, leaving a net profit of £58,150. For 1919 the working resulted in a loss, after meeting interest charges, of £18,121, reducing a credit balance brought down to £28,449, which was carried forward. This amount, added to the net profit for last year, gives an available balance of £86,600. An interim dividend of 30 per cent. was paid in December last on both the ordinary and preference shares; the preference dividend in arrear for 1919, less tax, required £630; and a balance dividend of 70 per cent. is now recommended, less income tax, the directors receiving £1,000 as extra remuneration, leaving £37,090 to carry forward. The company's oficina worked satisfactorily from February till the end of the year under review, but owing to the very unsatisfactory state of the nitrate market, which made itself manifest in September last and still continues, all work was suspended in January of this year, and workmen were discharged.

UNITED GLASS BOTTLE MANUFACTURERS.—In accordance with the requirements of the Committee of the Stock Exchange, particulars are published for public information of the United Glass Bottle Manufacturers, Ltd. It is estimated that the production from its Charlton Works alone, when completed, will be 90 million bottles per annum, providing, with the other sources of production of the Company, for a total production of 200 million bottles per annum, the requirements of the country being largely in excess of this quantity. The issued capital is £499,800, in 7½ per cent. cumulative preference shares of £1 each (free of income-tax up to 6s. in the £), and £417,000 in £1 ordinary shares. The new works at Charlton are only at present in partial operation, and no part of the profits for 1920 is attributable to this factory. The profits of the parent company, together with the profits of its subsidiary companies, after providing for interest on original debentures which are now being repaid out of the recent issue of 7 per cent. debenture stock, depreciation of plant, redemption of leaseholds, directors and management remuneration, and after charging income-tax and making provision for corporation profits tax, but before providing for excess profits duty, have been: 1914, £62,935; 1915, £81,449; 1916, £151,660; 1917, £106,191; 1918, £59,417; 1919, £171,616; 1920, £235,833.

Chemical Trade Inquiries

The following inquiries, abstracted from the "Board of Trade Journal," have been received at the Department of Overseas Trade (Development and Intelligence), 35, Old Queen Street, London, S.W.1. British firms may obtain the names and addresses of the inquirers by applying to the Department (quoting the reference number and country), except where otherwise stated.

LOCALITY OF FIRM OR AGENT.	MATERIALS.	REF. NO.
Sydney ...	Druggists' sundries	3
Montreal ...	Salt; white lead; soaps... ...	4
Winnipeg ...	Paint	7
Montreal ...	Sulphites; china clay; alum ...	11
Montreal ...	Soaps. Replies to the Canadian Government Trade Commissioners' Office, Portland House, 73, Basinghall Street, London, E.C.2.	—
British East Africa	Glassware	12
Warsaw ...	Jute; metals	19
Montreal ...	White lead; soaps...	—
Winnipeg ...	Paint	—
Montreal ...	China clay; alum...	—
Sydney ...	Druggists' sundries	—
Johannesburg	Glassware	—
Czecho-Slovakia	Pharmaceutical chemicals; oils...	—
Barcelona ...	Chemical and pharmaceutical products	—
Boston ...	Hides; skins; tallow; oils; chemicals; dyes	—
Toronto ...	Insulating varnishes	—

Tariff Changes

AUSTRIA.—Import permits may be granted without special application for glass and glassware, including fine hollow ware, glass bulbs for electric lamps; chemical auxiliary materials and products (except soda, bleaching soda, calcium carbide, prepared blacks, boot polishes, artificial mineral water products and iodine preparations), and certain prepared drugs. Export licences are no longer required for articles made of magnesite; mercury; caustic potash and caustic soda, solid and liquid; lead ashes, litharge, in scales and pieces, ground, in powder form, yellow and red lead, essence of salammoniac, liquid ammonia; hydrochloric, nitric, pyroligneous, and sulphuric acids; Glauber's salts, sulphate and bisulphate of potash, potash containing 85 per cent. of carbonate of potassium and more, water glass solid, ammonium chloride; salammoniac, saltpetre, bicarbonate of soda and potash, refined tartar, ammonia carbonate, bichromate of potassium, acetic ammonia, acetate of potash, sulphide of potash and ammonia, chlorate of potash, pyrolignite of lime, acetic iron mordants, alum, acetate and pyrolignite of alumina, white lead, pyrolignite of lead, acetate of lead, lead vinegar; aniline oil, nitrobenzol; formaldehyde; gelatine of all kinds; albumen, albumenoids, casein; methyl alcohol, chloroform, acetone, concentrated acetic acid; salts of potash, acetic and pyroligneous salts, silver nitrate and common soap.

GERMANY (OCCUPIED TERRITORY).—Petroleum and fatty vegetable oils have been added to the list o goods which do not require import licences.

ITALY.—Lead and zinc ore; lignite; linseed cakes (up to the end of July); and residues for the refining of seed oils may now be exported from Italy without the requirement of an export licence.

Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for any errors that may occur.

London Gazette

First Meeting and Public Examination

BLACKAMOOR CHEMICALS AND COLOURS, LTD., 40-44, Holborn Viaduct, London. High Court of Justice. Creditors' meeting, July 19, 1921, 11.30 a.m., at 33, Carey Street, Lincoln's Inn, London, W.C.2. Contributories' meeting: July 19, 1921, 12 noon, at the above address.

Companies Winding Up Voluntarily

ANGLO-NORWEGIAN ELECTRO-CHEMICAL & FINANCE CO., LTD.,—E. Dyball, Liquidator.

BRITISH CANADIAN EXPLOSIVES CO., LTD. (in voluntary liquidation).—A general meeting of members will be held on August 12, 1921, at 10.30 a.m. at 525, Salisbury House, London Wall, London. G. Smith, Liquidator.

CAUDLEDOWN CHINA CLAY CO., LTD. (in voluntary liquidation).—A meeting of creditors will be held at Commercial Buildings, Menacuddle Street, St. Austell, on July 20, 1921, at 2.30 p.m., R. E. Clark, Liquidator. NOTE.—The above notice is formal only. All creditors have been or will be paid in full.—17, Albion Street, Hanley.

Liquidator's Notice

ARGENTINE METALS (in liquidation).—A general meeting of members will be held at the office of Messrs. John Baker & Sons, 2, Billiter Avenue, Billiter Street, London, on Wednesday, August 10, 1921, at 3 p.m. F. A. Bell, Liquidator.

Mortgages and Charges

[*NOTE.—The Companies Consolidation Act, of 1908, provides that every Mortgage or Charge, as described therein, created after July 1, 1908, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every Company shall, in making its Annual Summary, specify the total amount of debts due from the Company in respect of all Mortgages or Charges which would, if created after July 1, 1908, require registration. The following Mortgages and Charges have been so registered. In each case the total debt, as specified, in the last available Annual Summary, is also given—marked with an *—followed by the date of the Summary, but such total may have been reduced since such date.*]

CHINA & METAL PLATERS, LTD., London, N.—Reg. June 27, deb., to Barclays Bank, Ltd. securing all moneys due or to become due to the bank; general charge. *Nil. May 13, 1920.

HIGH TEMPERATURE GENERATORS (1918), LTD., London, S.E.—Reg. July 2, £800 deb., to W. A. Tompkins, 10, Westleigh Road, Leicester, boot mfr.; charged on 11 superheater machines, also general charge. *Nil. December 8, 1920.

MANCHESTER DYERS (1914), LTD.—Reg. June 29, deb. and collateral mort. securing £8,000 to G. L. Hardcastle and anr. 27, Sackville Street, Manchester, mchts.; general charge, and Middleton Road Dyeworks, &c., Manchester. *£100. September 16, 1920.

RYLANDS' GLASS & ENGINEERING CO., LTD. (late RYLANDS GLASS & ENGINEERING CO. (1905), LTD., Stairfoot.—Reg. July 2, £50,000 debs.; general charge. *£39,090 2s. 9d. December 22, 1920.

UNION OILS & BITUMEN CO., LTD., Smethwick.—Reg. July 4, deb., to Barclays Bank, Ltd. securing all moneys due or to become due to the bank; general charge.

Satisfaction

MANCHESTER DYERS (1914), LTD.—Satisfaction reg. June 29, £4,000, reg. December 7, 1915.

Bills of Sale

[*The undermentioned information is from the Official Registry. It includes Bills of Sale registered under the Act of 1882 and under the Act of 1878. Both kinds require re-registration every five years. Up to the date the information was obtained it was registered as given below; but payment may have been made in some of the cases, although no notice had been entered on the Register.*]

ALLKINS, W. H., 1, Exchange Buildings, Brighton Road, Coulsdon, chemist. Filed July 6, £150.

HETHERINGTON, Wm., 56, Hazelbourne Road, Balham, pharmaceutical chemist. Filed July 11, £75.

NEWMAN, A. P., 51, Thompson Street, Barry Dock, chemist. Filed July 5, £60.

County Court Judgments

[*NOTE.—The publication of extracts from the "Registry of County Court Judgments" does not imply inability to pay on the part of the persons named. Many of the judgments may have been settled between the parties or paid. Registered judgments are not necessarily for debts. They may be for damages or otherwise, and the result of bona-fide contested actions. But the Registry makes no distinction of the cases. Judgments are not returned to the Registry if satisfied in the Court books within twenty-one days. When a debtor has made arrangements with his creditors we do not report subsequent County Court judgments against him.*]

BROWNE, A. M. S., Delves Lane, Consett, chemist, £18 16s. May 24.

ALLDIS, P. J., 97, Vicarage Road, Watford, oil and colourman, £10 2s. 1d. May 27.

LEE, C. H., 15, Bromley Road, Beckenham, chemist. £10 19s. 4d. May 23.

SHAW CHEMICAL CO., Garfield Street, Leicester, chemical manufacturers. £22 17s. 6d. June 4.

CASSON CHEMICAL CO., LTD., R/O, Westbourne Hall, Westbourne Grove, W., chemists. £65 15s. May 27.

NOBLES DRUG STORES, LTD., 2, Well Street, Cable Street, London, E., chemists. £10 15s. 6d. May 31.

WOOLDRIDGE & CO., 4, Bramshill Road, Cricklewood, chemists. £12 0s. 4d. May 27.

BROOKS, A., 215, Cheapside, Birmingham, drysalter. £10 8s. June 1.

DERRY CHEMICAL CO., LTD., R/O, North British Mercantile Buildings, East Parade, Leeds, chemical manufacturers. £39 6s. 4d. June 1.

WORSNOP & CO., 826, Manchester Road, Bradford, drysalters. £18 13s. 5d. June 1.

BEVAN, M. L., 100, Woodfield Street, Morriston, chemist. £16 16s. 1d. May 31.

LLEWELLYN, W., Dunraven Street, Tonypandy, chemist. £19 12s. May 31.

New Companies Registered

The following list has been prepared for us by Jordan & Sons, Ltd., company registration agents, 116 and 117, Chancery Lane, London, W.C.2:—

ALSATIAN & BROOKES CHLORIDE, LTD., Pinner's Hall, Old Broad Street, London, E.C. Nominal capital £31,000 in 2,000 "A" and 20,000 "B" shares of 10s. each and 20,000 "C" shares of £1 each. Import and manufacturing chemical, agricultural and other products. The subscribers (each with one "C" share) are: N. Brooke, C. E. Roudolphi. First directors, P. A. Helmer (chairman), N. Brooke (vice-chairman), C. E. Roudolphi (permanent), and J. N. Brooke, and C. T. Ashworth.

CLAPHAM DRUG STORES, LTD., 137, Landor Road, S.W.9. Chemists and druggists. Nominal capital, £2,000 in 2,000 shares of £1 each. Directors: T. C. Laws. Qualification of directors, £10. Governing director, 250 shares.

EGERTON CHEMICAL CO., LTD., 19, Brazennose Street, Manchester. Manufacturing chemists. Nominal capital, £1,000 in 1,000 shares of £1 each. Directors: J. F. Key, A. Ferrie. Qualification of directors, one share.

LONDON OIL BUYERS CORPORATION, LTD., 161, Camberwell Grove, S.E.5. Oil and petroleum merchants. Nominal capital, £500 in 500 ordinary shares of £1 each. Directors: F. J. Woollard (managing director). Qualification of directors, 100 shares.

SAND LODGE MINE, LTD., 19, Great Winchester Street, E.C. Mines, metalliferous land, oil wells, oil and petroleum bearing lands, and turn same to account. Minimum subscription, seven shares. Nominal capital, £100,000 in 100,000 shares of £1 each. Directors: A. A. Anson, R. H. Bruce, F. Hurdle, H. Legge. Qualification of directors, £500. Remuneration of directors, £200 each. Chairman £300.

T. H. SMITH (WISBECH), LTD., 1, Market Chambers, Market Street, Wisbech. Agri-horticultural chemists, manufacturers and dealers in pulp, &c. Nominal capital, £500 in 500 shares of £1 each. Directors: T. H. Smith, R. Scrafton. Qualification of directors, £1.

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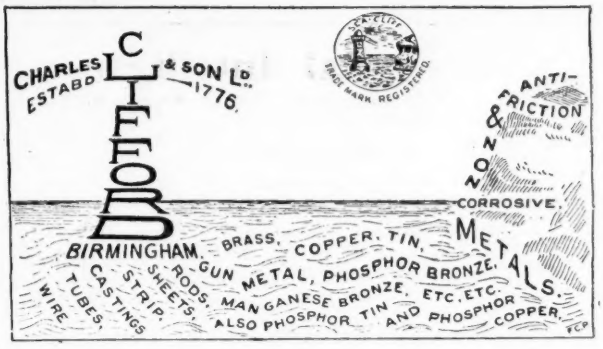

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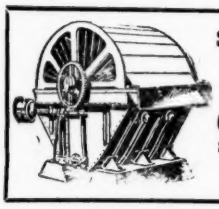

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PAINT, burnt umber, ground in oil, excellent quality, 50s. cwt. kegs free; Oxford ochre, 40s. cwt., kegs free. Half a ton of each for disposal.
1 cwt. only RED OXIDE, 50s.
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Particulars from MILLER, PAXTON & FAIRMINER, Auctioneers, 9, Portugal Street, Kingsway, W.C. 2.

TURN TO B. W. S. ANNOUNCEMENT ON PAGE V.

PATENTS

THE PROPRIETOR OF BRITISH PATENT No. 19884/14, dated September 17, 1914, relating to "IMPROVED METHOD OF REFINING CRUDE PETROLEUM AND THE DISTILLATES AND RESIDUES FROM ITS DISTILLATION," is desirous of entering into arrangements by way of license or otherwise on reasonable terms for purpose of exploiting the above Patent and ensuring its practical working in Great Britain. All inquiries to be addressed to B. SINGER, 28, E. Jackson Blvd., Chicago, Illinois.

SITUATIONS WANTED

ENGINEER.—A.M.I.C.E., age 28, ten years' experience in heavy chemicals, acids and organic products, seeks post as assistant engineer in chemical works. Box 243, CHEMICAL AGE Office, 8, Bouverie Street, E.C. 4.

MANAGER AND CHEMIST can undertake erection and management of soap plant, oil refining, glycerine recovery and alkali manufacture, agricultural, toilet and medicinal preparations; office and market routine; excellent references.—Write Box 237, CHEMICAL AGE Office, 8, Bouverie Street, E.C. 4.

TECHNICAL CHEMIST seeks position, home or abroad, in which an extensive works experience in responsible post could be utilised. Knowledge of languages. Excellent references. Would invest capital if desired.—Full details from Box 238, CHEMICAL AGE Office, 8, Bouverie Street, E.C. 4.

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